TECHNOLOGY DEPT.

Gas Journal

VOL. 282. 107th YEAR. LONDON, MAY 25, 1955 No 4799. PRICE 1/3

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A Diesel Engine driven Compressing Plant which has been specially designed in co-operation with the South Western Gas Board and Blackstone & Co., Ltd. who supplied the Diesel Engine.

This plant is to act as a standby to an Electrically Driven set, and automatically comes into operation in the event of an electric failure, thus maintaining the distribution of High Pressure Gas.

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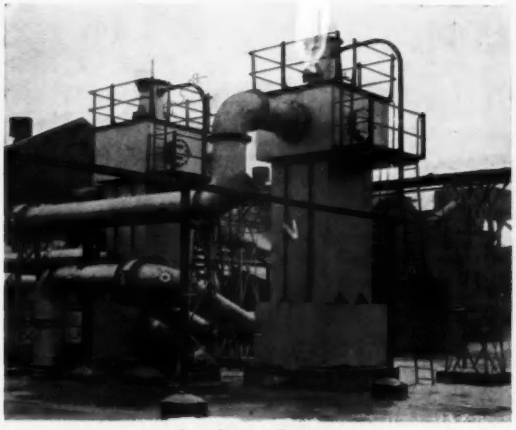
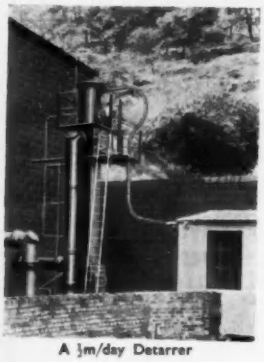


Two 5m/day Detarrers



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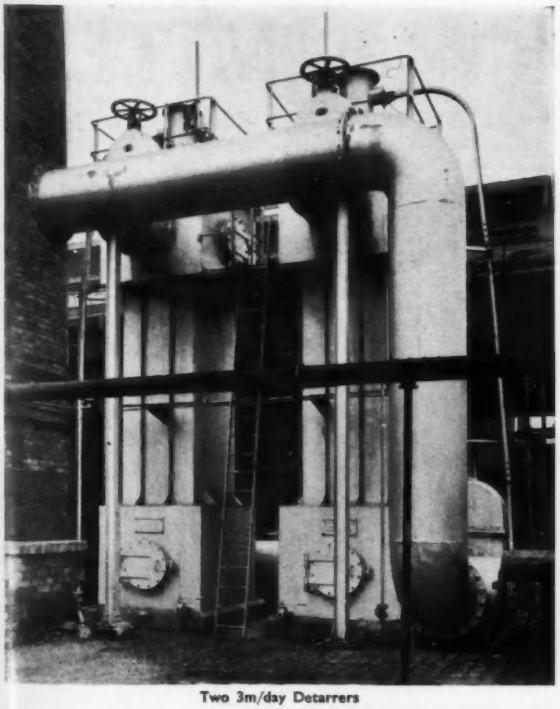

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A

Portrait of a harassed metal-trapper

now made extinct by the

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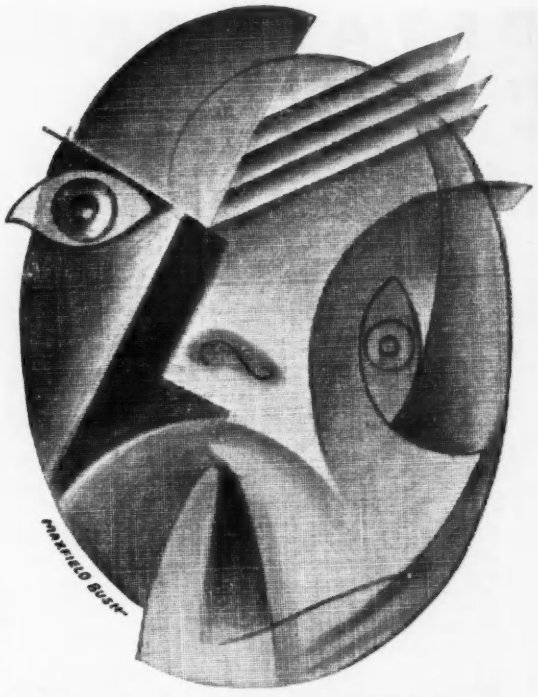

If only his methods had been as futuristic as his portrait, he wouldn't be wearing that anxious look. Nowadays, of course, nobody need get worried about locating lost pipes, covers etc. you just leave it to the Cintel Portable Metal Detector.

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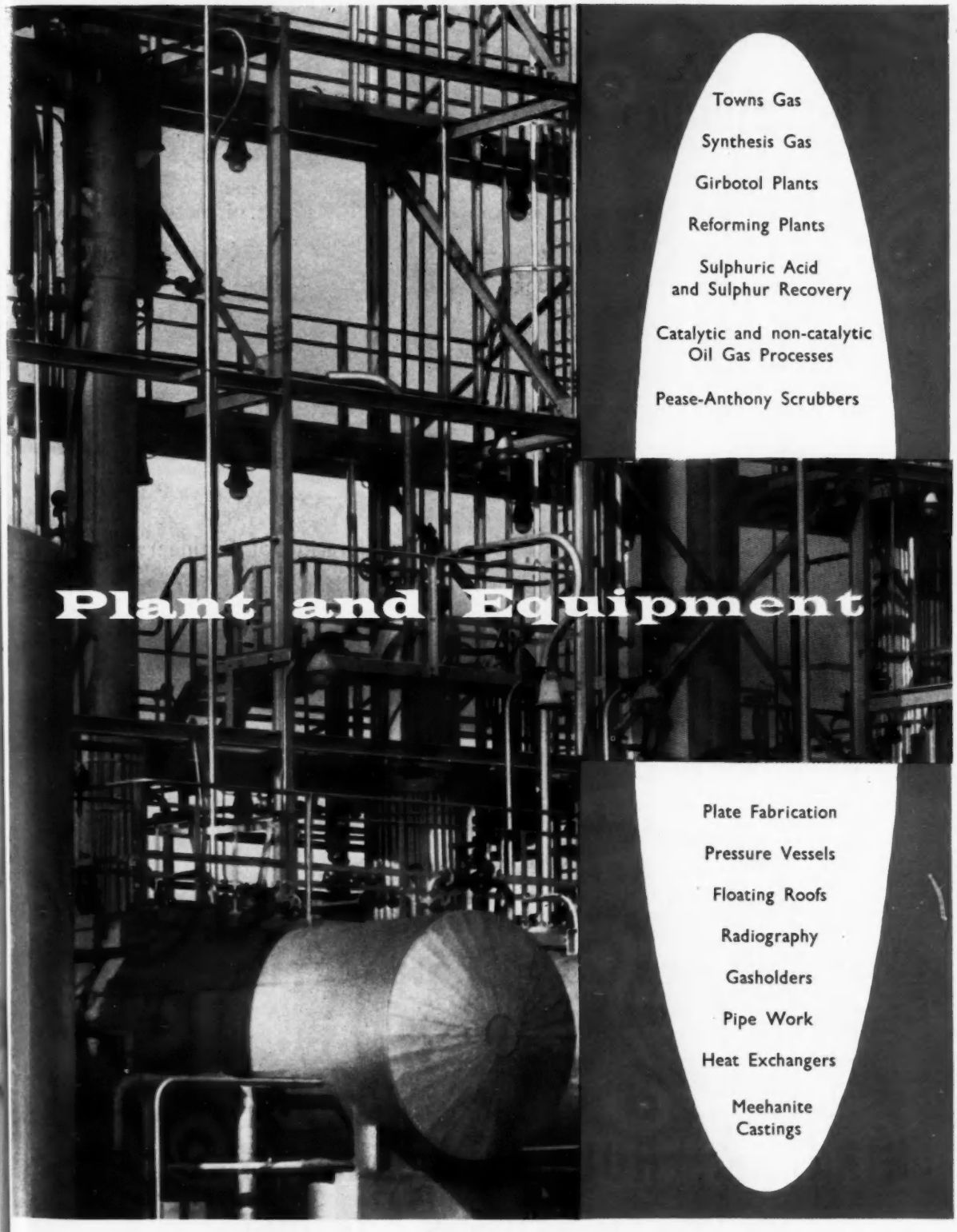

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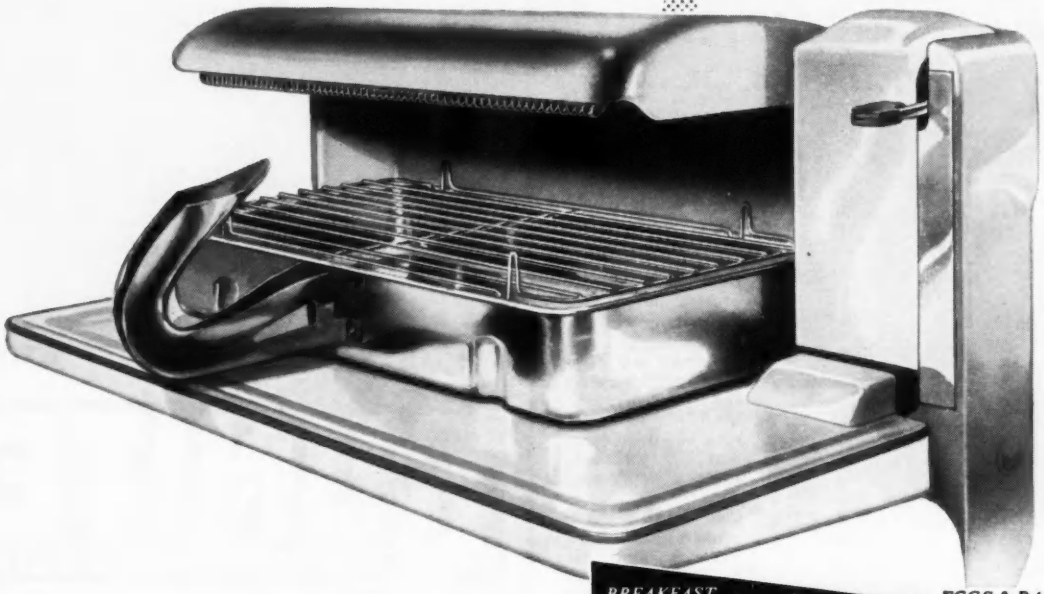

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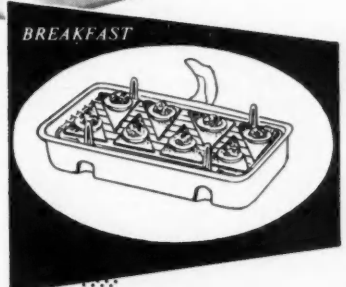
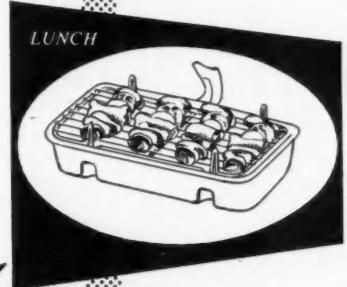


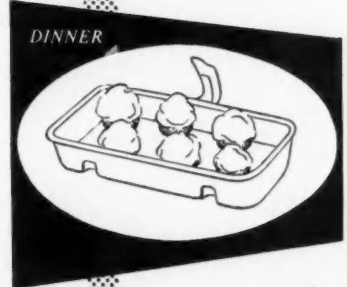
EGGS & BACON with a difference!

Remove the yolks from 4 halved hard-boiled eggs and replace with a mixture comprising diced bacon, egg yolks, seasoning, sauce and rice crispies.
Place halved eggs on rounds of toast in a greased fireproof dish and sprinkle with rice crispies and a little melted margarine on top. Place under pre-heated grill for 5-10 minutes.



RUSSIAN KEBABS

For each Kebab, skewer half a blanched kidney, small piece of steak, roll of sliced bacon, halved tomato, small sausage, and a mushroom, and brush with melted fat. Place under pre-heated grill for 7-10 minutes on grid in pan with long supports downwards. Serve on a bed of boiled rice decorated with watercress.



ORANGE SNOWBALLS

Peel top halves of oranges and remove sections complete, leaving rest of the peel as a cup. Separate and skin the sections, reform them in the peel cups and place in grill pan. Coat top halves of the oranges with meringue mixture and sprinkle with sugar. Place under pre-heated grill until delicately tinged and serve in individual fruit dishes.

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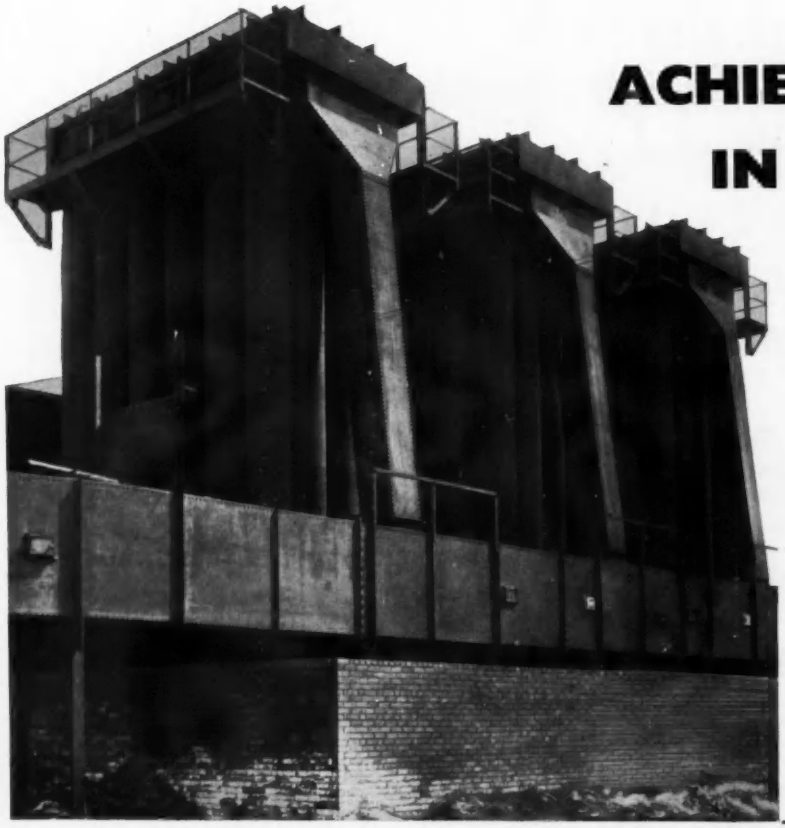

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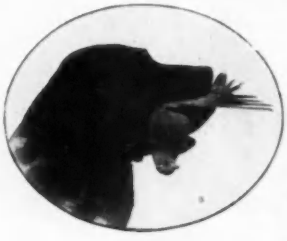

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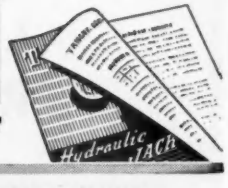
625	25	32	6	11·5
650	50	61	6	13
1215	15	38	12	18·25
1225	25	53	12	18·875



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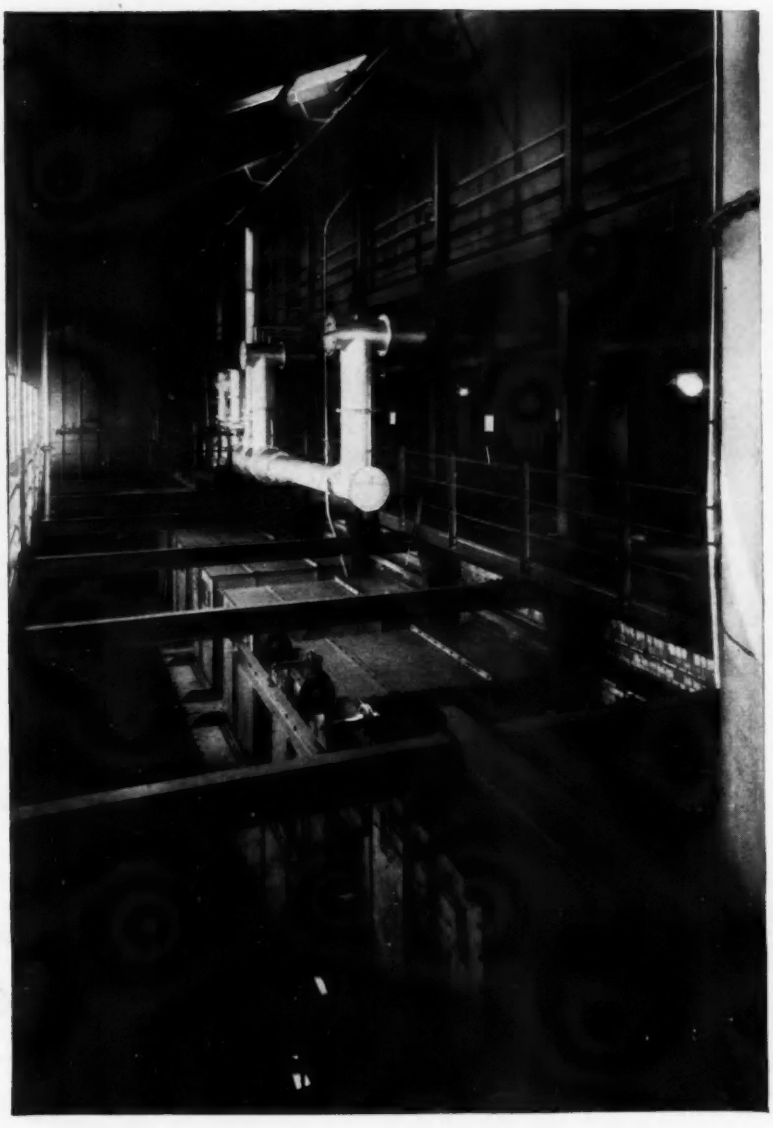

★ Bench showing Waste Gas Off-takes and Main Flue, and Isolation Dampers for Chimney and Waste Heat Boiler.

MANCHESTER
Bradford Road Works

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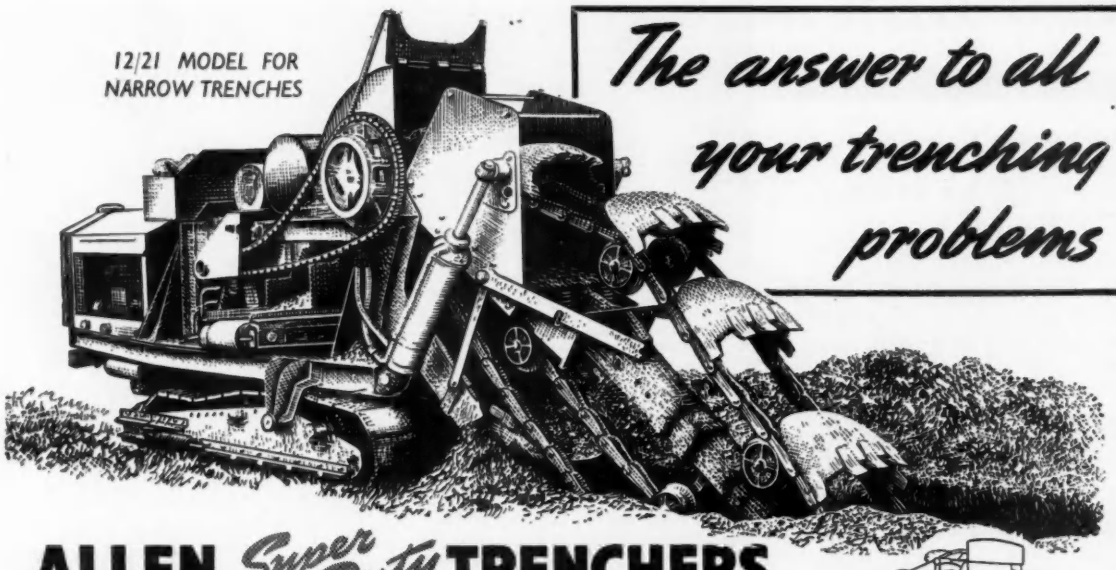

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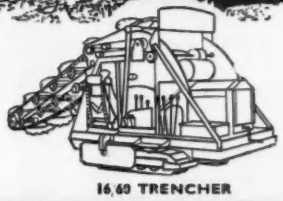

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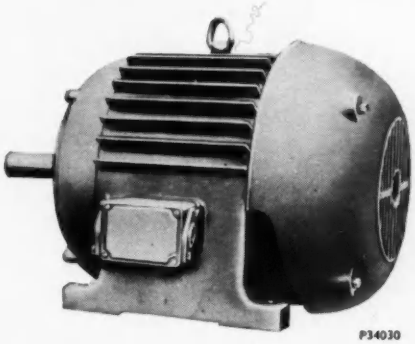

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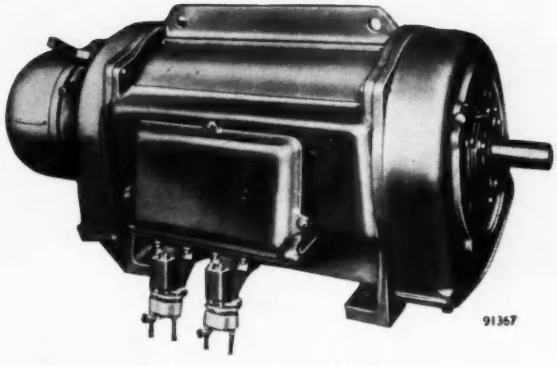
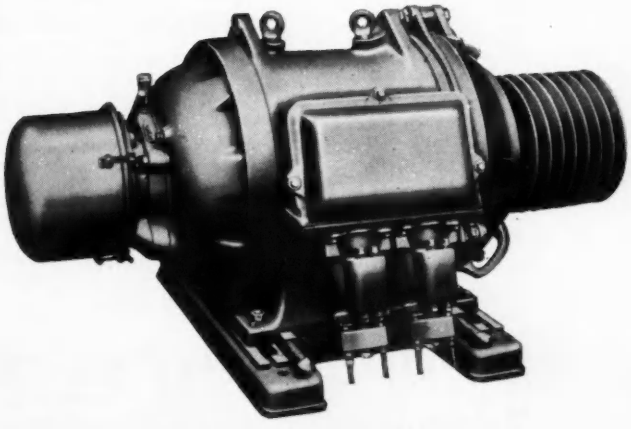


100 h.p. and above type HRW high speed (2,960 rpm) drip-proof slipring motor.



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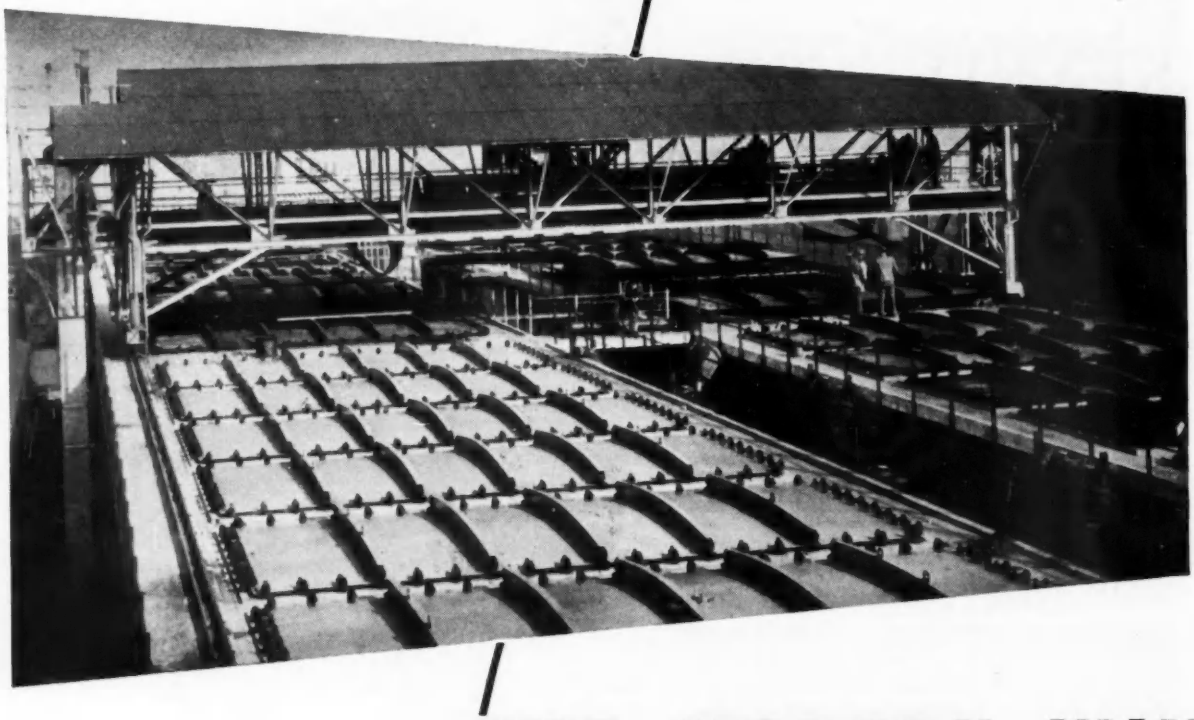

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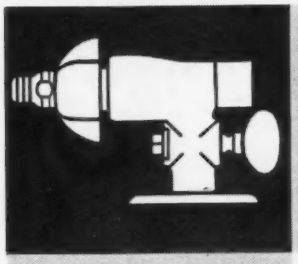
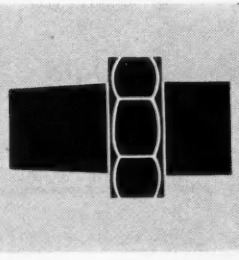
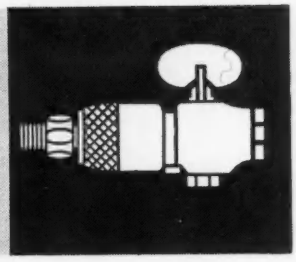
No. 3 PLUG & SOCKET PEDESTAL TYPE WITH STEM COCK

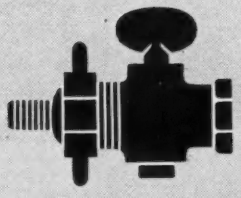


TINNED END UNION



'SIMFLEX' PLUG IN CONNECTOR WITH DROP FAN





½ B.S.P. D/F UNION COCK WITH WING NUT

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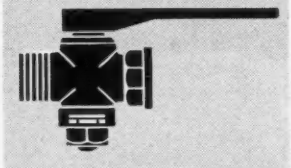
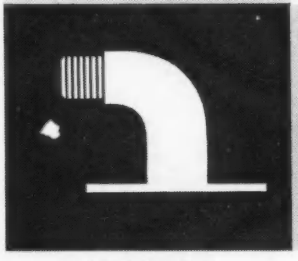
CYLINDRICAL ENDED EMERGENCY SIGN



M & F MAIN COCK WITH LEVER KEY

EDGAR for QUALITY



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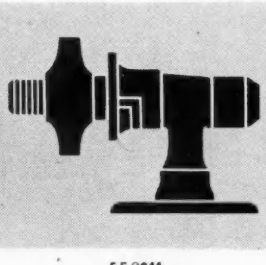

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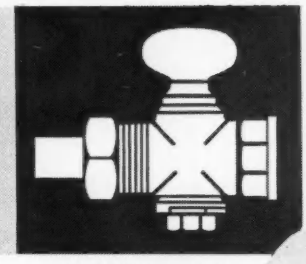

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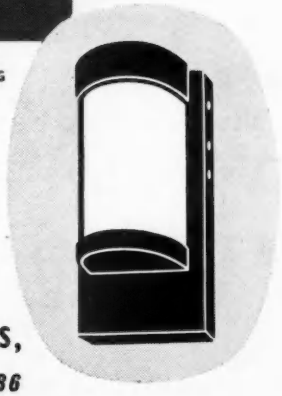

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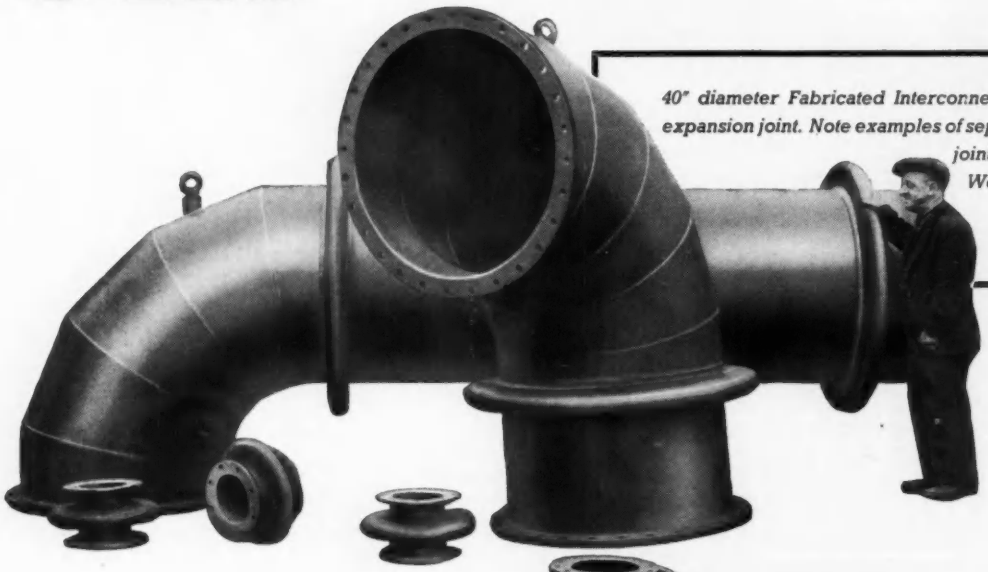

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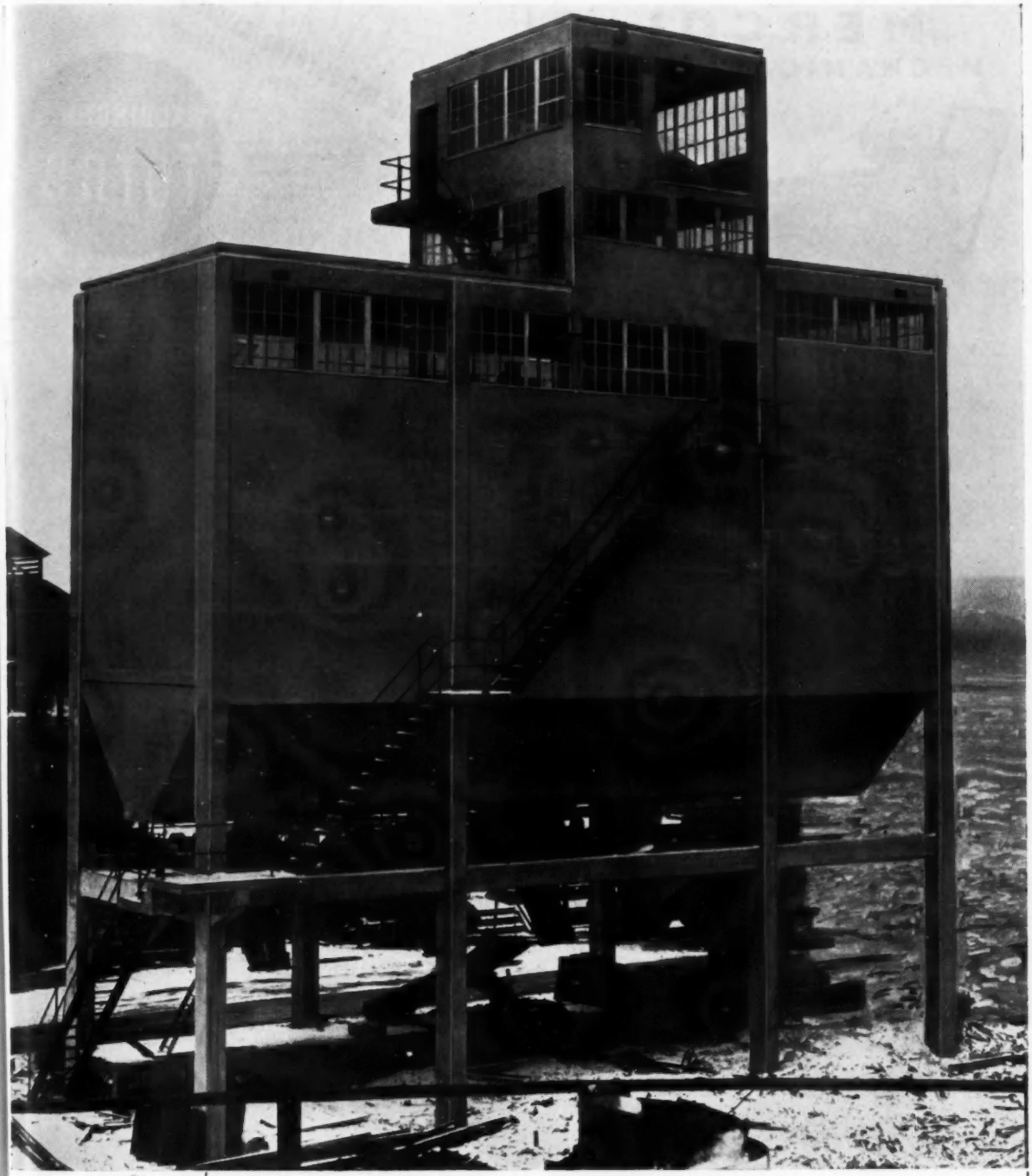

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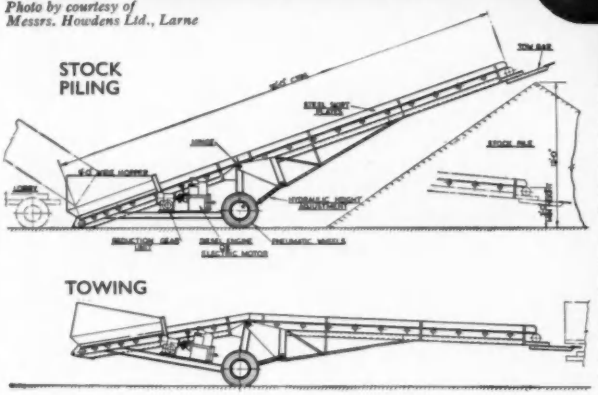

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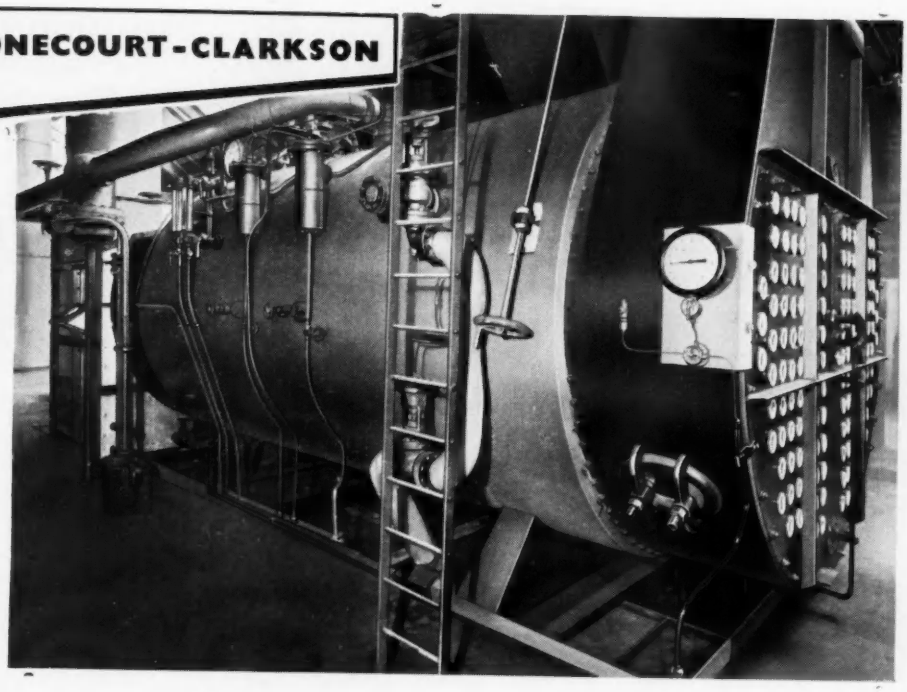

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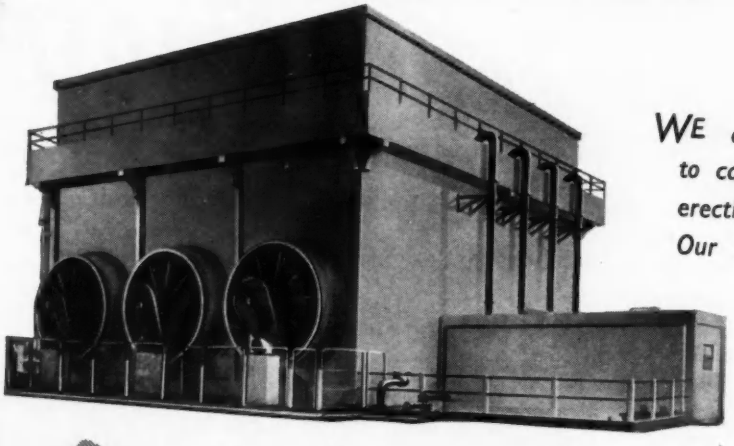

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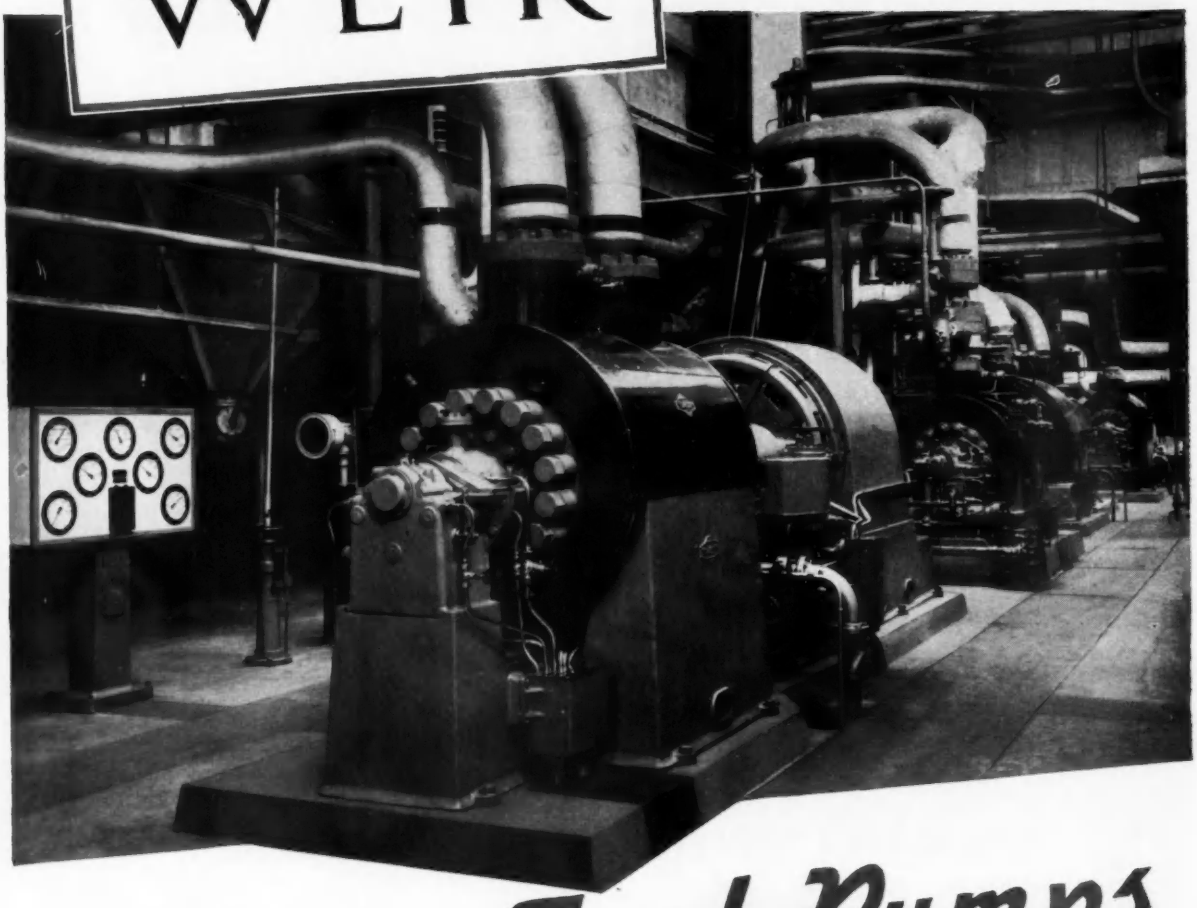

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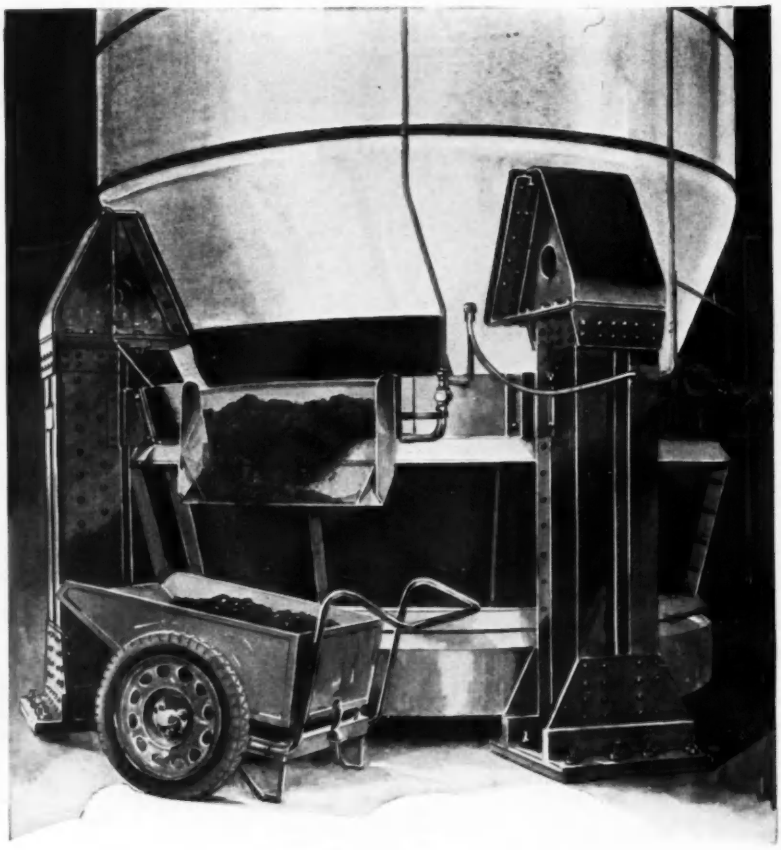

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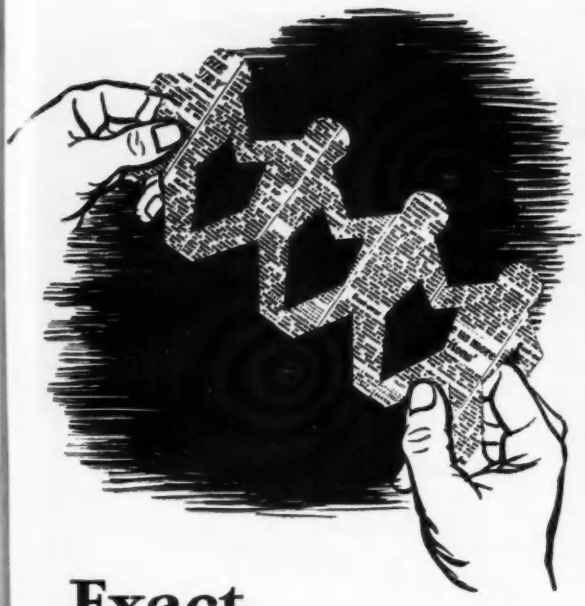

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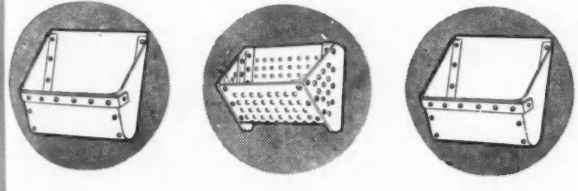

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107TH YEAR

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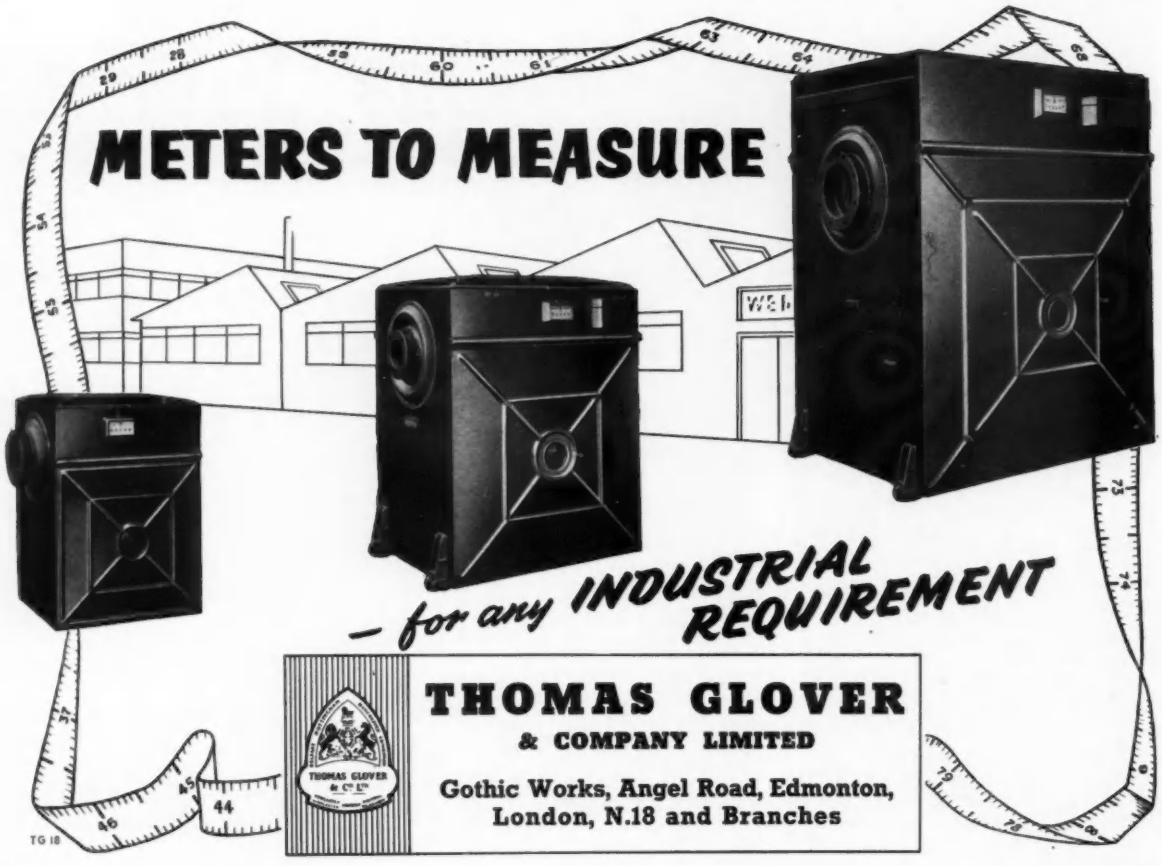

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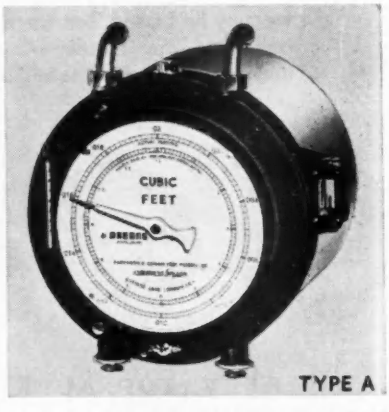

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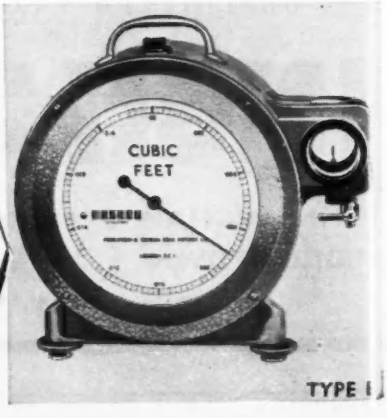

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Gas Journal

VOLUME 282. No. 4799. MAY 25, 1955. 107th YEAR

Engineers and Nationalisation

THE adjustment of the gas engineer's outlook that was necessary when nationalisation came about six years ago makes an interesting study. It was only natural that it was hard for many to look objectively at the effect of this tremendous step on the industry as a whole; whether it would be a good or a bad thing was a question coloured by personal difficulties. Now there is evidence that whatever feelings the individual had towards State ownership, the entire industry has made a supreme effort towards making a success of it. And, in fact, none can deny that in all but a few inevitable ways, the industry has received a vital stimulus.

Mr. E. O. Rose, Engineer to the Tottenham Division of the Eastern Gas Board, in his recent address to the London and Southern Section of the Institution of Gas Engineers, first dealt with three projects he had been connected with: The new works at Ponders End, completed in 1949, the extensions at Willoughby Lane, and the new Segas plant to be erected in the Division. As if that were not enough to tackle, he gave a clear picture of the engineer in relation to nationalisation of the industry. He considers that the only real justification for the Gas Act of 1948 was the increased efficiency and improved service that could be obtained by integration and discipline. To many of those employed in the larger undertakings there has been little change, but the 'Engineer and Manager' of the smaller undertaking, who was personally and solely responsible to his board for the conduct of his undertaking, was in a very different position. As integration proceeded, functionalism was found to be the only possible system of organization and the engineer was relieved of many matters which previously came under his jurisdiction. Mr. Rose touched upon what is clearly a source of frustration for many engineers when he added: 'This does not mean, however, that he has any less work to do, as the horizontal transactions he has to carry out with his colleagues in other spheres often take more time to complete than he would spend settling the matter himself. This is particularly so in matters of industrial relations and accountancy where the engineer finds it very difficult to take any step without seeking advice.'

What other difficulties does Mr. Rose see in the present set-up? To be sure he realizes the necessity of bringing such difficulties into the open without drawing a fearful cloak of words over the controversial points. He stated quite bluntly that the greatest personal problem of the engineer is to find sufficient time to do some engineering. There is no easy way. This problem has to be solved individually. Between the two extremes of capitulation to the claims of administration and isolation in an 'ivory tower' of science and technology there is an optimum mixture at which the maximum effect can be produced, and it is up to everyone of us to find it and resist all attempts from others to deflect us from our purpose.

Mr. Rose understood the desirability of running certain systems of administration to 'an embracing code of practice.' There is a great temptation for the gas industry to fall into this apparently easy method of control in which all that is required from officers and staff is accuracy and a strict attention to duty. Mr. Rose hopes that on the engineering side at least, the industry will not be reduced to that. He further hopes that no one will suggest that the training of an engineer is nothing more than the proper assimilation of rules and codes of practice. 'The engineer,' he said, 'whatever his administrative responsibilities may be, will always have his own particular engineering problems to solve and will always have a duty to exercise his own knowledge and experience in continually putting something into the system on his own account and in attending to those matters which he himself, and often only he himself, can see need to be undertaken.'

One example of Mr. Rose's fresh thinking made his audience at the meeting murmur thoughtfully. It is likely that there will be a repetition of his lament that as the years have gone by, more of the design and development of new plant has been left to contractors. We certainly hope so. There was a time when this country led the world in gas engineering, as Mr. Rose pointed out. It saddened him to reflect that since 1920 nearly all the major innovations in gasmaking plant and practice have been imported from the Continent or the United States. 'If engineers now find themselves tied to their desks, filling in, or even concocting, questionnaires, is it not to some extent their own fault in that they have sought to climb the ladder of administration rather than win the satisfaction of achievement in their own proper sphere?'

The importance of making mistakes is the surprising theme of Mr. Rose's next point, in dealing with the education of the engineer. No one, he maintains, can

know the real meaning of responsibility until he has made his mistakes and paid the inevitable penalties. This is a matter of opinion, of course, and furthermore, Mr. Rose himself does not appear to be so sure how this can be put into practice these days. In the past it was a different matter. While pointing out that when the industry's structure was simpler it was possible for a young man in his twenties to be in charge of a small undertaking where his errors would be of small consequence, he then states that nowadays: 'We have to be careful that young men in our care do not make unfortunate and expensive mistakes.' The answer to this vexed problem of what latitude to allow the young engineer and how far the practice of 'trial and error' can be carried out, cannot, of course, be conclusive and, we suggest, is perhaps a suitable subject for further thought.

Concluding his address, Mr. Rose tackled the subject of recruitment with vigour, and without pessimism. 'If we are to expand we want the best, and only if we expand can we get the best.' He continued: 'It is false economy to cut down our technical staffs to the minimum required to keep the wheels turning. It is only from the surplus, over and above this minimum, that new enterprise can develop. I believe that our industry still has a long way to go and that many spectacular developments lie ahead of us. There is plenty of work for engineers crying out to be done in every direction and there is really no lack of good men if we are determined to put them to proper use.' In the last phrase, Mr. Rose gives a clear rebuff to much of the thinking of those who have resigned themselves to accepting second best in face of the 'glamour' industries of an atomic age.

N. I. F. E. S.

ON page 526 of this issue, we refer to a review given recently by Dr. W. A. Macfarlane, General Manager of the National Industrial Fuel Efficiency Service, of the first year's work of the Service, already well known by its initials 'N.I.F.E.S.' This organization, which is now getting into its stride, is a natural outcome of the post-war fuel situation in this country, a situation in which coal continues to advance in price without any compensating improvement in quality, while the derived fuels—gas, coke and other solid smokeless fuels and electricity, perforce 'string along' behind in the spiral of increasing costs. In the years before the 1939-45 war, when there was an abundance of coal for both industrial and domestic consumers, strenuous efforts were made to encourage people to use *more*, and it is hardly surprising that nobody cared very much just how efficiently it was used since it was relatively cheap and easy to come by. Now, however, things are very different and many industrialists are finding it important to save fuel wherever possible in their manufacturing processes. It is also true that, even at the present price of coal, etc., quite a number of industrial undertakings are still disinclined to spend money on more efficient fuel burning equipment in view of the fact that their fuel bills are such a small part of their total costs of production. One thing is certain, however: the number that can afford to adopt an 'ostrich' attitude will inevitably decrease as competition gets keener, as labour costs rise and fuel continues to be more and more expensive.

Not only so; another potent factor has entered the field on the side of fuel efficiency. This is, of course, the Beaver Report on Air Pollution. At long last the public conscience has been thoroughly roused concerning the pollution of the atmosphere, particularly above large cities, by smoke from inefficiently operated or designed fuel burning equipment. Legislation was promised by the last Government before the dissolution of Parliament and, even though the issue is less on the public mind than it was a few months ago, it would require only one real 'smog' next autumn or winter for it to come to the forefront again. Something obviously will have to be done about air pollution whichever party is in power at the end of this month.

As a consequence of these two considerations, N.I.F.E.S. is likely to occupy an increasingly important position in the counsels of industry in the years that lie ahead. From the good start which it has made in tackling its own organization and in getting to grips with the widely diverse problems of fuel utilization in industry, one can have confidence that N.I.F.E.S. will be ready to cope with whatever situation may arise. It was quite right and proper that Dr. Macfarlane should pay tribute, in his lecture, to the 'predecessor' of N.I.F.E.S.—the Fuel Efficiency Branch of the Ministry of Fuel and Power. This department of the Ministry did sterling work over the years just after the war in assisting industry to boost its productivity by increasing the efficiency with which it used its fuel. In many respects, N.I.F.E.S. takes up where the Branch left off.

In his lecture, Dr. Macfarlane referred to the representation of the gas industry on the directorate of N.I.F.E.S., which was incorporated as a non-profit making company in December, 1953, and it is important that it should be recognized just how much gas can offer in the solution of the two problems posed earlier. It gives to industry a reliable source of heat capable of refined and accurate control and free from smoke, and already many firms have come to appreciate its value, especially where the qualities outlined can be fully utilized. There can be no doubt but that the closest collaboration between N.I.F.E.S. and the gas industry can do only good to the cause of both.

Cause for Optimism

WE have to wait until the autumn for the annual reports of the Gas Council and the area boards, but already some of the boards have given provisional indication of the year's results, and now the Gas Council itself has disclosed some interesting statistics for the first nine months of the sixth year under nationalisation —the period ended December 31, 1954., The feature of the gas industry's progress during those nine months was the continuing increase in the use of gas by industry. The rise has been steady and for the nine months there was an increase of 9% over the corresponding period of the previous year. Domestic sales also increased by 1½% and commercial sales by 6½%. The increase in total sales was over 4% and provisional figures for the January-March quarter this year show that this rate of increase has been well maintained. High gas production was maintained with only a 1%

increase in coal carbonized, but oil used in gas-making was increased by 27%. In addition, during the quarter October to December, 1954, over 2 mill. gal. of heavy oil were used by the gas industry for direct conversion into gas by new processes and in water gas plants. Sales of appliances were much higher than in the previous year. Sales of water heaters and washing machines were nearly trebled, and of refrigerators nearly doubled. Gas cooker sales increased by 9%. In each of the first three quarters of the financial year 1954/55, gas sales were over 4% more than in the corresponding period of the previous year, and provisional figures indicate that this increase was maintained in the final quarter. All area boards showed an increase in sales. In the three quarters domestic sales increased by over 1½%. Industrial sales were at a high level in each quarter, and in the nine months an increase of 9% over the corresponding period of the previous year was achieved. Commercial and other sales also increased by approximately 6½%. The effect of tariff changes on revenue received in the first nine months was small. The average revenue per therm of gas sold in the nine months rose by only 0.16d. per therm.

The increased sales were met mainly by increasing the production of water gas which requires no coal. The production of coal gas increased by 1½% and the quantity of coal used by 1%, but water gas production increased by 21%, and, as we have already said, the use of oil in water gas by 27%. It is of interest to note that in the quarter October to December, 1954, the gas industry used nearly 1 mill. gal. of heavy oil in oil gasification plants and over 1 mill. gal. of heavy oil in water gas plants. The quantity of surplus gas purchased from coke ovens and oil refineries increased by over 7%. Production of coke was almost unchanged as compared with the corresponding period of the previous year. Provisional statistics for the whole financial year indicate that sales of coke were more than 4½% up on the previous year. Crude tar production increased by 1½%, and crude benzole production by 8½% in the nine months.

Sales of all appliances were at a high level in each quarter. In the quarter October to December, 1954, nearly 250,000 cookers were sold or sent out on simple hire, and in the nine months sales of cookers were 9% above the level of the corresponding period of the previous year. Water heater sales increased by 163% in the nine months and sales of washing machines also increased by 175%. New gas making capacity to a total of 99 mill. cu.ft. per day was completed and brought into operation during the nine months. This capacity was almost equally divided between carbonizing and other gas making plant. In the same period there was a net increase of 1,880 miles of mains. All these new records give good cause for optimism not only on the part of the nationalised gas supply industry but also among those responsible for supplying the industry with plant and appliances.

Sir Frederick West, LL.D.

LORD WOOLTON, as Chancellor, conferred the honorary degree of Doctor of Laws on Sir Frederick West at Manchester University on May 11. Sir Frederick was one of five recipients of the degree and was presented to the Chancellor with due ceremonial by Professor W. Mansfield Cooper as 'a City Father whose paternalism has known no bounds and to whom two . . . or is it three? . . . generations of Manchester and Lancashire men have turned whenever they have needed advice and encouragement . . . have turned and have come away with calm of mind and refreshment of spirit.' Not that this spritely young fellow of eighty-odd summers led a placid life. He was a 'tornado of activity'—who for a time bathed in those magical waters of local politics which, in that city, seemed an essential condition of energetic longevity. He was of the vintage of the Kays, the Mitchells, the Simons, and the Walkers, and he sparkled not less today than he did half a century ago. Professor Cooper said it was precisely 50 years ago that Sir Frederick became Chairman and Managing Director of the first of the Companies which bears his name; a company devoted to 'gas improvement'—50 years in one of the not quite so salubrious of their suburbs and still effervescing. Here, surely was a matchless optimism.

For over 30 years he was devoted to the interests of the Manchester Ship Canal—for 17 years its Chairman—and 'there are reports that he is restless for the city to begin its experiments in nuclear transport, so that here again he may help to pioneer.' Professor Cooper added 'There is about the man a quenchless curiosity in persons and things; an interest in humanity which knows no diminution as the years roll by . . . an interest which throws a protective care round the school children of Miles Platting and Newton Heath, around the nationals of the unhappy Polish state and which does whatever it can to foster Anglo-French relations. To the staking of a claim for the return to industry of disabled persons he has applied every ounce of his great persuasive capacity. And of his services to the Church, the diocese would bear instant testimony—for all his activities are but new fields of opportunity in which to apply those Christian principles which have so supremely lighted his own steps.'

MAKING A MOVE

OF recent years it has crept into the consciousness of many of us that London is acutely overcrowded. The London County Council has had its development plan approved by the Minister of Housing and Local Government. But in doing so the Minister has increased, even beyond the Council's proposals, the pressure for movement of industry out of London, by reducing the amount of land zoned for industrial use. Owners and managers are likely to experience increasing difficulties in finding room to expand their operations in London; others whose premises may be displaced by road improvements, housing schemes, new schools and parks, will find it more and more difficult to secure alternative sites in the County; and yet more will need sooner or later to move out of areas zoned for residential and other non-industrial uses. A step in the direction of informing industry about the possibilities and, indeed, promise of moving to the expanding country towns, as well as the new towns, has been made by the L.C.C. in a book entitled: 'Making a Move.' Under agreements between the councils of these towns and the L.C.C. and with the Government's help and approval they can provide factory sites for London industrialists and in some cases are building new factories as well as new homes for employees. The brochure says: 'In the County of London alone there are 30,000 families ready and willing to move to expanding towns as soon as jobs and homes are ready for them. Some of your employees may well be among them. The local authorities and the Government will look after the homes and all the public services which make up a healthy, happy community.'

Correspondence

INDUSTRIAL TRUCE

DEAR SIR,—The course, past and present, of industrial relations demonstrates that the Government and the law cannot secure industrial peace. The future relationship of employer and employee must continue to be one which they themselves must determine, looking to the State and the Legislature only for such measures as are necessary to implement their agreements

The industrial relations problem with which Britain is confronted would be more effectively and expeditiously resolved if a 12 months' industrial truce were called, during which, and without prejudice to employee or employer, the weapon of the strike and lock-out would not be used.

In the environment thus created representative organizations would be better able to evolve an industrial relations plan for the future and thus avoid the industrial anarchy towards which the nation is heading. The period of the truce might make it clear, by actual practice, that the parties have more to gain from joint voluntary negotiation and arbitration than from militant action.

If the Trades Union Congress could forthwith give the lead in advocating an industrial truce it would be without political obligation, for we do not know which party will form the next Government and to what extent its majority will be effective.—Yours faithfully,

J. R. W. ALEXANDER,
President, Institute of Arbitrators.
Temple E.C.4.

Enniskillen Borough Council, at a special meeting, decided to consider in committee a solicitor's letter indicating that the Enniskillen Gas Company wished to hand over the gas undertaking to the Council The letter from the solicitors stated that they had been consulted by the Enniskillen Gas Company, who had informed them that owing to capital commitments they find themselves no longer able to continue the supply of gas to the town, and, therefore, in view of Section 34 of the Enniskillen Gas Act, which empowers the Company to sell to the Council, it would appear that the time has arrived for the Council to consider taking over the concern.

Mr. J. A. Derbyshire, Manager of the municipal gas undertaking, told Bangor (Co. Down) Borough Council that owing to increased cost of coal, materials, wages, salaries and other charges, he would like to go into the financial position of the gas undertaking with the Borough Treasurer. A report will be given to the next meeting of the Committee. Mr. Derbyshire stated that the warm weather during the early and middle parts of April caused a decrease of 2.8% in the output of gas compared with the corresponding period last year. The average daily output for April was 861,000 cu.ft. compared with 886,000 cu.ft. in April last year.

Personal Notes

MR. F. A. G. WESTWOOD, Technical Assistant at the Swansea undertaking of the Wales Gas Board, has been appointed Distribution Superintendent at the Barry undertaking.

MR. R. B. WHALLEY, A.M.INST.W., M.AMER.W.S., has joined the staff of Metal and Pipeline Endurance, Ltd., as Chief Welding Engineer. He was formerly the Welding Engineer for the Central Electricity Authority, being responsible for the building up, management, and training at its national training centre for welders, and has been retained by them as a guest lecturer at courses for station superintendents and engineers in London. Previously he was attached to the technical service and research laboratory of the Quasi Arc Co., Ltd., Bilston.

MR. R. J. MOFFAT, M.B.E., Deputy Director-General of Marketing (General), National Coal Board, is to succeed SIR WILLIAM MCGILVRAY, C.B.E., as Director-General of Marketing, from July 1. For some years he was in charge of the inland trade branch of the Coal Mines Department of the Board of Trade. He resigned from the Civil Service in May, 1939, to become General Manager of the Midland (Amalgamated) District Coal Mines Scheme. During the war he was also the Joint Coal Supplies Officer for the same District. He joined the National Coal Board in September, 1946, as Deputy Director-General of Marketing (General).

MR. W. LINDSAY BURNS, Managing Director of the Balfour Group of Companies, is on a six weeks business trip to the United States and Canada. He is going to discuss various projects with their associates, the Pfaudler Company of Rochester, U.S.A., and with Dominion, Scott, Barron, Ltd., of Toronto, a subsidiary company working on the design and manufacture in Canada of the plant of George Scott & Son (London), Ltd., and W. S. Barron & Son, Ltd., of Gloucester. MR. LINDSAY BURNS, JNR., and MR. I. M. O. HUTCHISON have been appointed joint Assistant Managing Directors of the Balfour Group.

MR. A. SCOTT, General Manager of No. 4 (Carlton) Area of the North Eastern Division, National Coal Board, is to succeed as Production Director of that Division MR. H. A. LONGDEN, who, on July 1, is to become Director-General of Production at national headquarters. Mr. Scott began work in 1923 as a pit bottom worker at the Marquis Colliery, Burton-on-Trent. He won a scholarship in 1926 to Birmingham University, where he took the degree of B.Sc. (Mining) in 1929. He then joined the Stanton Ironworks Co., Ltd., and in the next six years was an electrician at Teversal and Silverhill Colliery; a face worker, stone drifter and face supervisor at Bilsthorpe Colliery; and undermanager of the Dunsil Seam at Pleasley Colliery. He has been General Manager of No. 4 Area since January, 1947.

MR. W. M. GLEDHILL, Manager of Stirling District of the Scottish Gas Board, has been appointed President of Stirling Rotary Club. Mr. Gledhill is Junior Vice-President of the Scottish Association of Gas Managers. He was at one time Manager of the gas undertaking at Marple, near Stockport, and for four years, until 1942, he was Assistant Manager of the Stirling Gas Light Company. In that year he succeeded Mr. A. Cuthbert as Manager.

MR W. G. GALBRAITH, Chief Finance Officer of the Scottish Division of the National Coal Board, is to succeed MR. H. W. BARKER as Finance Director of the North Western Division. Mr. Barker was appointed Deputy Chairman of the North Western Division in April. Mr. Galbraith was Finance Director at the Ministry of Food during the war years, and Secretary and Commercial Manager of the Lothian Coal Co., Ltd., and a Director of Associated Lothian Coal Owners Ltd., from 1945 to 1946. In 1947, he was appointed Financial Accountant of the Scottish Division of the National Coal Board, and later in the same year Divisional Chief Finance Officer.

Diary

May 24-27.—INSTITUTION OF GAS ENGINEERS: 92nd Annual General Meeting, Portsmouth. For full programme see 'JOURNAL," April 27, p. 235.

June 1.—SOUTHERN G.C.C.: Conference Room, Civic Centre, Southampton, 11 a.m.

June 2.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

June 4.—SCOTTISH JUNIORS (EASTERN): Annual Outing. Edinburgh. Visit to Granton works in morning.

June 6-10.—NATIONAL AND LOCAL GOVERNMENT OFFICERS' ASSOCIATION. Annual Conference, Brighton. (Meeting of gas industry members on June 6).

June 7.—SOUTH EASTERN G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

June 8.—MANCHESTER JUNIORS: Visit to Newton Chambers, Thorncliffe.

June 11.—SCOTTISH JUNIORS (WESTERN DISTRICT): President's Day visit to Trudeston Gasworks, Glasgow.

June 13-14.—EASTERN SECTION I.G.E.: Annual General Meeting, 'Some Problems Involved in the Manufacture and Distribution of Gas,' B. Wilkinson. Sheringham.

June 14.—NORTHERN G.C.C.: 30, Grainger Street, Newcastle-upon-Tyne. 11.15 a.m.

June 16.—MIDLAND JUNIORS: Ladies' Day.

June 18.—WESTERN JUNIORS: Ladies' Day and Summer Meeting.

June 21.—LONDON AND SOUTHERN SECTION, I.G.E.: Summer Meeting.

The Northern Gas Board is considering the construction of a plant for manufacturing low-temperature coke.

Gas Central Heating and Hot Water*

By W. WALLING, Wolverhampton District, West Midlands Gas Board.

WATER heating by gas offers an ever increasing load, and the demand for appliances is consistent in all income groups. Hot water installations can be classified into four groups: (a) Tank system (now obsolete), (b) instantaneous heating, (c) storage cylinder system, and (d) indirect or calorifier system. Too many instantaneous installations are fitted where insufficient attention has been paid to water supply, and it is necessary to fix a tank supply with sufficient operative head for the heater to function satisfactorily. Many consumers, in spite of alternative suggestions, insist on this type of heater being fitted to the existing main supply, which is sometimes quite inadequate to give reasonable results at all times, and which in turn gives rise to future complaint.

When consumers see these appliances working in a showroom or display, where the working conditions are as near perfect as possible, they rightly, or wrongly, assume that the same performance will be given by the heater in their own homes irrespective of prevailing conditions, and it is at this point that the salesman should suggest that an individual survey of the premises be made to check pressures, etc., in order that the consumer may be advised on the matter. There can then be no recriminations, and full satisfaction can be given, as it is well known that one dissatisfied user will cause many potential enquiries to be cancelled.

During the past few months there has been much publicity regarding 'Operation Rescue,' a Government and local authority effort to improve the living conditions of those people occupying what is termed a 'sub-standard' house.

The following details refer to three installations, picked at random, fixed in a sub-standard type of house:

	House No. 1	House No. 2	House No. 3
Installation fixed	June 1953	Sept. 1953	Nov. 1953
Number of adults	3	4	2
Number of children	2	—	1 Baby
Number of baths per week by adults	3	8	6
Number of children's baths per week	4	—	7
Any shortage of hot water ..	No	No	No
When is the heater lit	On all the time	7 a.m.	On all the time
When is the heater turned off ..	—	9 p.m.	—
Reasonable in cost	Yes	Yes	Yes
Satisfactory	Yes	Yes	Yes

The increase in gas consumption, per dwelling house, over 12 months, is as follows:

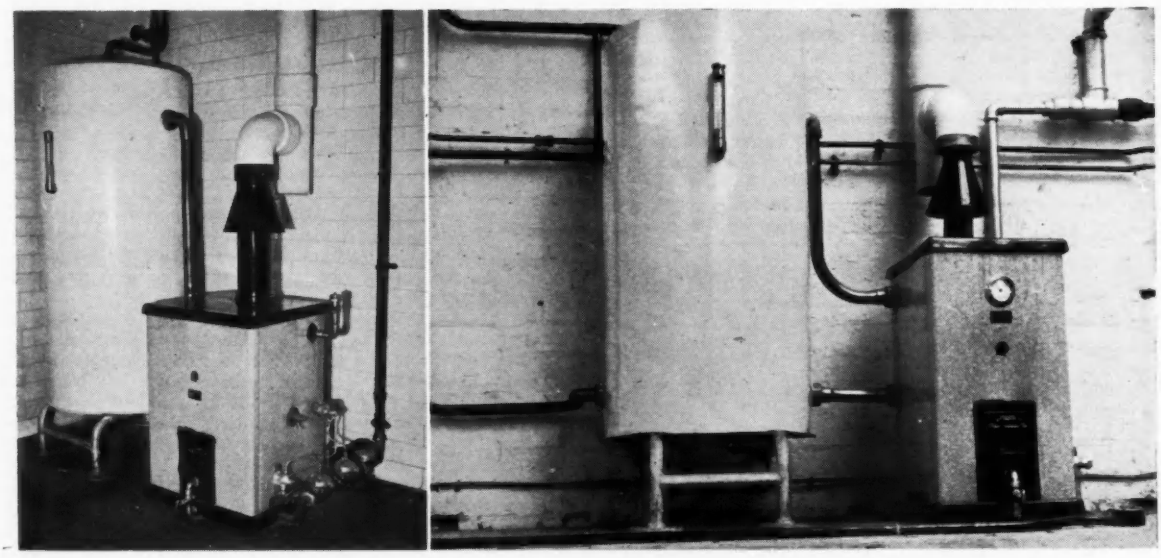
	House No. 1	House No. 2	House No. 3
Cu.ft. ...	15,800	15,300	36,200

From these figures, the amount of hot water used weekly would be:

	House No. 1	House No. 2	House No. 3
Gal.	120	150	200

In estimating the probable demands for hot water in restaurants, canteens, factories, etc., every detail must be carefully considered in relation to the number of fixtures to be supplied, type of premises, and demands by the occupants. Generally the size or capacity of the cylinder is two-thirds the maximum amount of hot water required at peak periods. The size or output of the boiler would be 75% of the capacity of the cylinder. These figures would meet the domestic hot water requirements of the middle and higher income groups, also certain installations in factories. When it is known that the demand will be for a short period, the storage capacity may be high and the boiler rating low, so that the heating up would be gradual between peak periods.

Where a constant demand is required the position becomes reversed. The storage capacity should be sufficient to meet the needs, but the boiler rating would be high in order that replacement may be as speedy as the demand. Where the installation is for restaurants, cafés, hairdressing establishments, etc., greater consideration must be given to the size of the boiler and cylinder.



Two examples of storage sets installed in a Midland factory. There are three other similar installations in the same establishment.

Where shower equipment is installed, water is required to be used at various temperatures, as the same hot water equipment would be used for a variety of purposes such as: Cleaning purposes, 140° to 150°F.; baths, 105° to 108°F.; showers, 90° to 95°F.; wash basins, 115° to 120°F. Control of the temperature for cleaning purposes, baths, and wash basins would, of course, be by the taps.

Control of the temperature for showers requires a fine degree of accuracy. This can be obtained by using one of the bi-metallic mixing valves which, after being adjusted,

* From a paper presented to the Midland Junior Gas Association at Birmingham, April 5, 1955.

will give the temperature required. This is most important, as any sudden increase in temperature could be harmful to the user. Showers can be very wasteful of hot water, particularly the rose or drilled type. These are in various diameters from 2 in. to 5 in. and may use three to five gal. per minute when in use. The volume used is, of course, governed by the vertical head.

On many occasions during the war, we were asked to install shower equipment in factories and schools, and we found that excellent results were obtained by using a different type of shower which gave a jet of water in the form of a bell. The amount of water used per shower varied from one gal. to two gal. per minute, and although the amount of water per minute through each shower was halved compared with other types, the results were just as effective.

Two illustrations show storage sets fitted in a factory. In addition, there are three other similar installations in the factory. One set comprises an Ideal 2DG boiler with automatic cut-off; rating, 30,000 B.Th.U. per hour; one 40-gal. cylinder insulated; 1¼ in. primary flow and return; temperature maintained at 140°F. This unit supplies the hot water requirements for 50/60 people in the drawing office. The other set consists of an Ideal 3DG boiler with automatic cut-off; rating, 45,000 B.Th.U. per hour; one 60-gal. cylinder insulated; 1½ in.; primary flow and return; temperature maintained at 140°F. This unit supplies the hot water requirements for 60/65 people in the toolroom.

Where office or sedentary workers are employed, the quantity of hot water required per person is assumed to be ¾ gal. each, and where manual workers are employed a higher figure will be required—from 1 to 1½ gal. per person. This is dependent on the nature of the employment.

Another illustration shows one of four similar installations in a large departmental store. These are respectively the hairdressing department, restaurant, cafeteria, and staff toilets. There are, in addition, smaller standard installations in the building.

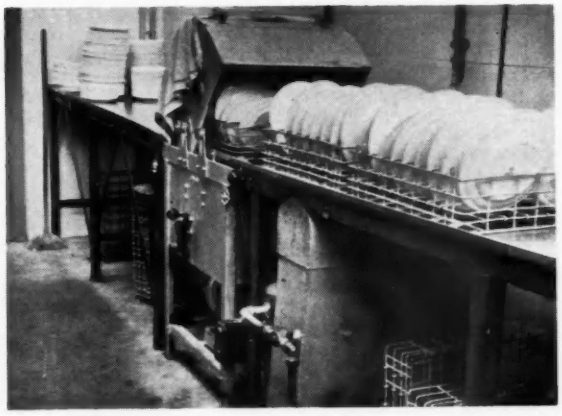
Equipment installed in the hairdressing department includes a Potterton Series D. 3-section boiler; rating, 99,000 B.Th.U. per hour; output 99 gal. per hour raised 100°F.; temperature 160°F.; cylinder—150-gal. capacity—insulated. Secondary circulation 1½ in. is by means of pump. Basins fitted with mixing taps and showers total 17; basins with ordinary taps, eight, and sinks, two. The average daily number of ladies having hair treatment is 200, and in each case the hair is washed twice and the time taken per shampoo is three minutes for each washing, therefore approximately 4 gal.

One of four hot water storage installations in a large departmental store.

of hot water is required for each customer. The average amount of hot water used daily is 800 gal. The approximate gas load per day is 9 therms plus standby losses. The reason for the secondary circulation having a pump fitted is because the plant is fitted above the hairdressing saloons.

In the cafe the equipment installed includes a Potterton Series D. 3-section boiler; rating, 99-100,000 B.Th.U. per hour; output 99 gal. per hour raised 100°F.; cylinder—120 gal. capacity—insulated; secondary circulation 1¼ in.; total length, 148 ft.; number of sinks, seven; number of wash basins, one; one Hobart dish-washing machine.

The restaurant is in use from 10 a.m. to 5-30 p.m., and the average daily meals served are morning coffee, 348; lunches, 268; teas, 299. For making the beverages, one 16 in. Still boiler with two 2-gal. coffee urns and two 2-gal. milk urns are fitted and also one 14 in. Still boiler with single draw-off tap is used for boiling water. The temperature at cylinder is 146°F. The secondary circulation is a natural gravity type and the time taken to draw hot water at the last sink, a distance of 82 ft., is eight seconds; temperature, 141°F. The quantity of hot water used daily averages 600 gal. This constitutes a daily gas load of seven-therms plus stand-by losses.



Hobart dish washing machine, one of two which are in operation for four hours each day.

The cafeteria has a direct hot water set comprising one Potterton boiler Series D, 3-section, B.Th.U. rating 99,000; one galvanized cylinder having a capacity of 106 gal.; and one feed tank having a capacity of 100 gal.; primary flow, 1½ in.; return, 1½ in. This storage unit supplies all the hot water for use in the cafeteria. Seven sinks are fitted and there is one Euk 3-unit dishwasher. The temperature setting of thermostat is 160°F. Number of meals served (weekly and daily): Mid-day 12-2.30 p.m., 9,360, 1,560; afternoon teas, 3,600, 600; beverages, 9,000, 1,500. For making the beverages, one 16 in. Still boiler with two 2-gal. coffee urns and two 2-gal. milk urns are used.

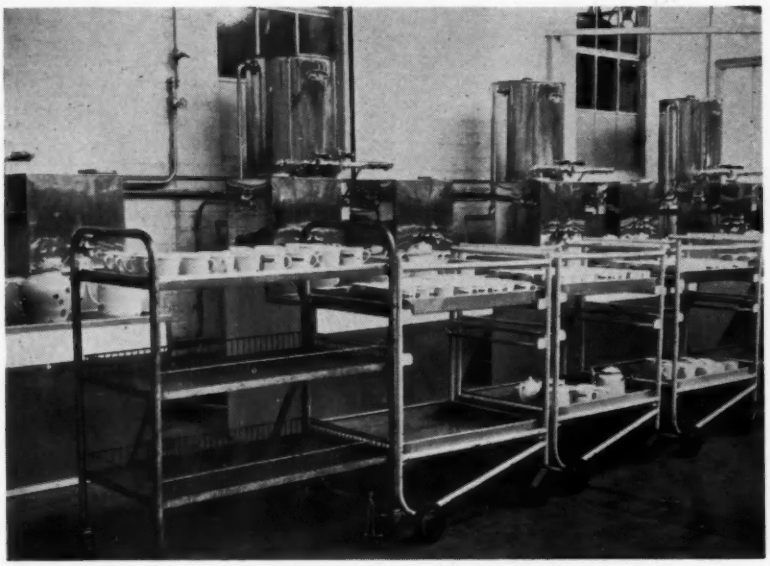
This hot water equipment is fitted in a small building on the flat roof above the cafeteria; the reason for installing the unit above was due to the lack of space available in the kitchen. The kitchen staff commences to use hot water at 9 a.m. The peak load is from 11.30 a.m. to 3.30 p.m. when full demand is made on the boiler. From 3.30 p.m. to 5.30 p.m. the demand is reduced to approximately 50%. The quantity of hot water used daily is between 700 and 800 gal. The daily gas load is eight therms plus stand-by losses. The gas equipment is maintained monthly.

The whole of the kitchen equipment in one very modern factory is fired by gas and, since the inception of the restaurant, the demand for meals and beverages has greatly increased. The seating accommodation is for 600 people and the number of meals served during the past 11 months has totalled over 150,000; the restaurant is open only for mid-day meals, and for evening meals when required by people working overtime. It offers daily for the mid-day meal, soup, a choice of eight hot dishes, and three hot sweets. The number of beverages sold over the same period was 820,000; this figure includes also the tea and coffee sold at the tea breaks in the morning and afternoon. The equipment for supplying the tea for the mid-morning and mid-afternoon break is situated in the factory.

Details of the equipment installed are as follows: Restaurant: Direct hot water storage set; two 25-gal. Stil boilers; Coffee-master set. Boiler: Potterton Rex D Series rating 99,000 B.Th.U. per hour; storage cylinder—150 gal capacity; feed tank—100 gal. capacity; primary flow and return, 1½ in.; secondary circulation size, 1¼ in.; total length

212 ft.; thermostat setting, 160°F.; insulation of cylinder, 1¼ in. This equipment serves five double compartment sinks, one single sink, one wash basin and two Hobart dishwashers.

A high degree of cleanliness is maintained, which means that 75% of the sinks are in continuous use from 10 a.m. to 5 p.m. The approximate amounts of water used on each sink, per hour, are: Three double compartment sinks, 20 gal. each; two double compartment sinks, 12 gal. each; total required per hour for sink use, 84 gal. The dishwashing machines are in operation from 12.30 to 5 p.m. each day.



Section of the tea bay, showing three of the four Stott boilers.

When it was decided to make a tea bay, certain factors were emphasized by the management, namely, that 70 gal. of boiling water were required twice daily for the mid-morning and mid-afternoon break. Speed in serving was of prime importance, together with equipment which required the minimum of attention. It was decided to install four 20 gal. bulk storage Stott boilers, each having thermostatic control. These boilers were fitted on stands at high level, the stands themselves being designed by the management of the factory. As we have rather hard water in the district, we installed a 500 scale reducer, which is topped up with Micromet every fortnight. The gas load, per day, of the tea bay, is approximately 5½ therms.

Central Heating

Central heating offers a large field in the use of gas, and while we do not wish to enter into competition with the heating engineer, it is to our mutual advantage that some understanding of the problems which confront him should be understood by those who have to deal with such installation. Most of the enquiries for gas-fired central heating plant are for replacement, or the conversion of existing coke-fired equipment.

A low pressure gravity system consists of a boiler, radiators, flow and return pipes, feed tank, cold feed pipe, and expansion pipe. The boiler should be capable of supplying the maximum amount of heat to be transmitted by the radiators and pipework, plus an overload of 20% to 25%. For example, assuming that the radiators and pipework of a heating system totalled 900 sq. ft. radiation surface and 144,000 B.Th.U. per hour, the size of the boiler to be installed should be one that has a B.Th.U. output of not less than 172,000 per hour. To the number of sq. ft. of heating surface of the radiators must be added the amount of heating surface of the pipework and fittings; on the average system this is usually about one-third of the heating surface of the radiators.

Large boilers offer little difficulty when converted from solid fuel to gas, as, due to the extended heating surface of the flueways, a high degree of efficiency, 75% to 80%, is easily obtained. One would not advise a higher efficiency than 80% as condensation from the products of combustion becomes a major problem. Where an enquiry is received for conversion of a small independent solid fuel boiler to gas firing, it is recommended that a standard gas-fired boiler be installed. Small independent solid fuel boilers have little or no secondary heating surface in the flueways, and although curved flue baffles may be fitted over the gas burners to deflect the products of combustion against the heating surface of the boiler, there may be no certainty that the efficiency will be high, which, in turn increases running costs.

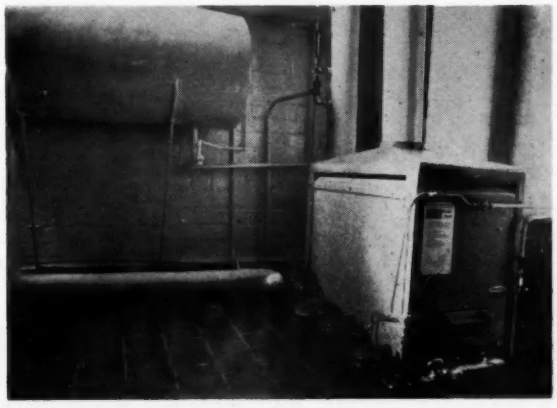
Every installation of a gas-fired boiler should have the following controls: (a) immersion thermostat, (b) flame failure device, (c) clock control, (d) independent pilots, and (e) governor. The immersion thermostat should have an adjustable range from 90°F. to 190°F. and the consumer should be fully instructed as to its use. During the heating season it will only be necessary to set the thermostat at maximum for approximately six to eight weeks; for the remainder of the heating season the setting will range from 130°F. to 160°F.

Flame failure devices are important and, where possible, should be of the thermocouple type with magnetized valve. Clock control is essential, particularly when running costs have been quoted, as indiscriminate use by the consumer will upset all calculations and cause complaint.

Heating Surface

The amount of heat to be provided must be sufficient to warm the air in the room; also it must replace the heat loss through the structure of the room or building. The calculations for the heat losses must be by measuring the air contents of the building, and all surfaces of the walls, floors, ceiling or roof, the results to be multiplied by their co-efficient of heat loss. The co-efficients are based on heat loss of one hour's duration.

Where the heating of a building is intermittent, in say, churches, business premises, and offices, additional heating surface of radiators and pipes will have to be allowed for and may increase this by as much as 30%. As an example of estimated heat losses, the following will serve as a guide: A room on the ground floor 15 ft. long 12 ft. wide and 10 ft. high, facing north and east, with windows 5 ft. by 4 ft. on the north and east walls has 1½ air changes per hour. The total B.Th.U. required would be 7,932. The B.Th.U. figure must be divided by the transmission figure as per sq. ft. per degree difference of the particular type of radiator required = 170. Therefore, the heating surface required would be $\frac{7,932}{170} = 46.6$, say, 47 sq. ft. as a round figure.

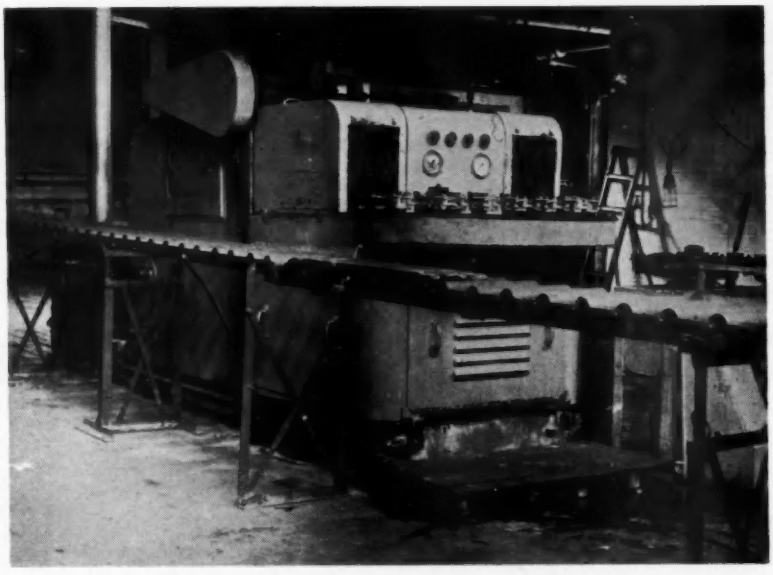


Central heating boiler installed in a large residence.

In the case of a central heating boiler fitted in a large residence a calorifier is connected to the boiler for domestic hot water. Prior to the installation of the gas boiler, the heating was supplied by two Aga units, coke-fired. The details of the installation are as follows: Boiler, Potterton Rex 5-section Series 1; heating circuit is a one pipe drop system having three radiators on the ground floor; heating surface of the radiators and piping, 200 sq.ft.; domestic hot water is obtained from the calorifier, the capacity of which is 40 gal.

A secondary circulation is connected from the calorifier to the baths and basins which are at some distance from the boiler house; the area of the heating surface is 15 sq. ft. There is also another circulating pipe taken from the primary flow to the calorifier which is connected to a towel rail fitted in the bathroom, one radiator fitted in the kitchen, and one radiator fitted in the airing cupboard. The amount of heating surface on this circuit totals 65 sq. ft.

Estimated running costs were based on the following factors: number of people in the house, four adults; number of baths per day, three; one large electric washing machine in use twice per week. It was assumed that approximately 100 gal. of hot water would be required daily, and in addition heat would also be maintained in the kitchen airing cupboard and towel rail in the bathroom, for 15 hours per day, seven days per week. Based on the present price of gas, the cost per quarter would be £22 12s. 6d. for 338 therms (first 45 at 1s. 7d. (£3 11s. 3d.), next 180 at 1s. 4d. (£12), next 113 at 1s. 3½d. (£7 1s. 3d.).) To this must be added the heat loss from the heating circuit which totals 200 sq. ft. of heating surface of radiators and pipes. The running cost of heating pipes and radiators, based on 15 hours per day, seven days per week, 30 weeks of the year, is estimated at 552 therms per quarter. (First 112 therms at 1s. 3½d. (£7 4s. 8d.), next 450 at 1s. 3d. (£28 2s. 6d.). Total cost per quarter, winter season, £57 19s. 8d. Average weekly cost £4 9s. 2½d.)



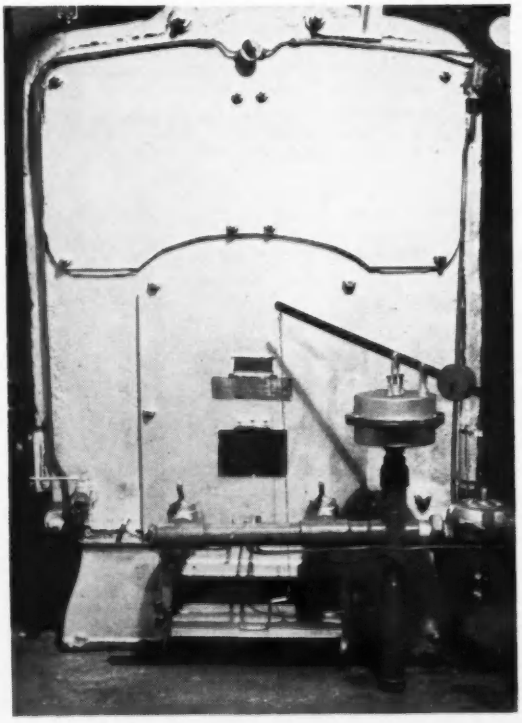
Gas-heated bottle washing plant in a wine and spirit stores.

Actual costs were as follows: October 14 to December 14, 588.6 therms; number of weeks, nine; average weekly cost, £4 6s. 1d.; December 14 to March 14, 940.5 therms; number of weeks, 13; average weekly cost, £4 13s. 5½d.; average weekly cost for 22 weeks, £4 9s. 10d. Amount of gas used from September 17, 1954, to December 14, 1954, 154,800 cu.ft. (696.6 therms).

A gas-heated bottle washing plant fitted in a large wine and spirit stores comprises a Miller Hydro 'Bestever'; Potterton D. Series 3 boiler, rating, 99,000 B.Th.U. per hour; clock control fitted; water capacity, 250 gal. (approximately). This plant is used twice weekly. The clock brings the boiler into operation at 8.30 a.m. and the time taken to heat the full contents up to 160°F. which is the temperature required, is between 2½ and three hours. Bottles are passed through at the rate of 96 every five minutes; usually the operation is completed in two hours when the total quantity of bottles passed is 2,304.

A conversion unit fitted in 1947 supplies heating for a block of property comprising building society premises, shops, hairdressing establishment, and suite of offices. The unit consists of Duoflam conversion Set No. 303 A.G. fitted with immersion thermostat; clock control relay valve for high/low operation; Honeywell Brown thermo-cut-off device, governor. Water flow temperature, 170°F.; outside air temperature, 29°F., flue gas temperature, 482°F.; CO_2 in waste gases, 9.2%. Original gas consumption quoted was 75,000 to 80,000 cu.ft. per week.

The amount of gas used from November 1, 1954, to January 14, 1955, was 773,600 cu.ft., with a weekly average of 73,670 cu.ft.



A conversion unit fitted in 1947 for heating a block of offices and business premises.

ANGLO-FRENCH ATOMIC PLAN

The United Kingdom Atomic Energy Authority and the French Atomic Energy Commission have agreed to the exchange of information relating to the peaceful applications of nuclear energy. Britain will also supply France with experimental quantities of special materials such as uranium-zirconium alloy fuel elements capable of withstanding high temperatures, which have been developed by British scientists and nuclear engineers. France on her part will pass on to Britain information gained from her long experience in operating nuclear reactors using heavy water as a moderator material.

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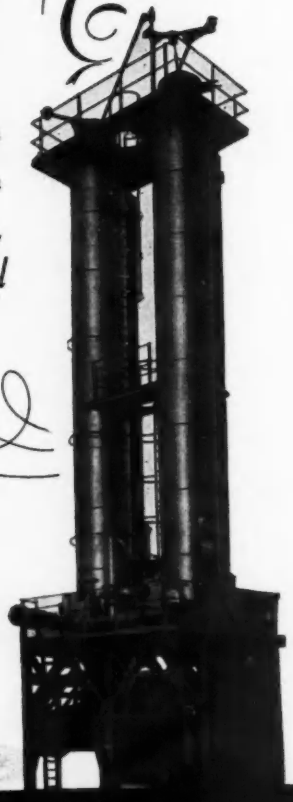

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An Administrative Approach to Technical Efficiency

The discussion on a paper presented by D. C. Elgin to the Scottish Association of Gas Managers' Spring Meeting on April 22, 1955. An abstract of the paper appeared in the 'JOURNAL' of April 27.

Mr. G. C. Wood, Galashiels, opening the discussion, said he appeared to be one of those fortunate people who had received their training in an undertaking which operated management accounting, and he was surprised to find that it was not widely adopted in other undertakings before nationalisation. Economics had been stressed practically from the day he had started. Although they referred to themselves as a two-fuel industry, he would not agree that there were only two main products. There was a minimum of four—gas, coke, breeze, tar and, in some undertakings, benzole, ammonia, and spent oxide. Although breeze and coke both came out of a retort together there was a slight difference as one had a market value four or five times the value of the other. In his opinion, in any form of cost analysis, those two products must be treated separately. In his own works the substitution of coke for breeze in the boiler fuel would reduce their profit by £2,500. It was essential that any form of substitution of coke for breeze must be brought to light in the cost analysis. This alteration in the cost analysis could easily be incorporated as the figures were available from Form A.B.1.

The technical results given by Mr. Elgin showed that since nationalisation the industry had been improving its efficiency, even prior to the introduction of 'material control' and he thought it could be assumed that material control existed in some form or other before the introduction of the standard control. It would be interesting, said Mr. Wood, to know what proportion of the saving in the net cost of coal could be apportioned to electrification, and could the cost of electricity not be taken into account in determining the net cost of coal?

The results of test runs must be treated with reserve, went on Mr. Wood. Shorter periods had been used than those recommended and the effect of inaccurate stock measurement had a large effect over a short test. In their case, an error of two tons in the coke stock difference altered the cost per 100 therms by 10d., and ½ in. in the tar well stock had the same effect. Over the test run period a 'corrected' gas figure was used, although many undertakings did not correct their gas volume to S.T.P. A heavy holder could have an appreciable effect on results. He understood that in some instances it had been necessary to carry out more than one test run in a works. Why was this necessary? Was it due to the fact that the first test was not acceptable as a standard and how was it decided that the final test was a true one?

Mr. Elgin had stated that the acid test was the material cost and not the F.E.I., but in Table IV he had used the efficiency figure to compare results. What were the corresponding cost figures? Why had he compared annual figures with a 'reference period' and not with a complete year? The main conclusion from his address confirmed what most managers had been trying to say for some time, *viz.*, there was no substitute for technical control, and technical control paid. What had been the cost of this confirmation?

Mr. T. R. Cameron, Grangemouth, said it was gratifying that the first form of administrative control brought attention to the carbonizing process and perhaps confirmed the adage that 'profits are made in the retort house.' That process absorbed the largest capital expenditure in the works and consumed the largest charge to revenue. He would, therefore, agree with the author on the need for some form of cost control and the simple presentation of the working results in technical and financial figures. That had been achieved with the system Mr. Elgin had described. The author was aware of the shortcomings and weaknesses and had referred to them and that could be taken as a guarantee that as far as possible the weaknesses would be cured with the passage of time.

The most important figure was that which gave the material cost of gas at actual prices. There was now a tendency to give savings over a period based on standard costs and there was a danger that the inter-relation of the standard costs might not be the same as the inter-relation of the actual costs, and so give a false impression of progress. To pay too much attention to the standard cost could mean that the gas at actual costs was dearer than need be, since the coke to coal ratio in each case might not be the same and, as they were aware, the carbonizing process did depend on that ratio. To fix a standard price for coal and vary the cost of the by-products to the prevailing ratios would complicate the simplicity of presentation and should, for that reason alone, be excluded from the short-term figures, but it should be used to temper any estimations of past savings over a long period.

Mr. W. K. Hutchison, C.B.E., Vice-President of the Institution of Gas Engineers, said the Paper was a good one and he already had discussed it privately with Mr. Elgin. They needed a more sensitive indicator than the F.E.I. The effect of any test was to create disappointment. In the area for which he was responsible they had large companies and amalgamations of large companies and they had the same difficulties and problems there in getting statistics and information and results on a common basis. For the purpose of technical control and accountancy their statistics had to be accurate. All figures should derive from the same source and should correspond. Stock adjustments could lead to quite alarming discrepancies. What was needed was a 'technical approach to the administrative efficiency of the technical branch.'

Mr. W. C. Campbell, Paisley, said some might think that Mr. Elgin was there to expound a theory of the Board and they would hesitate to discuss the matter. But it was encouraging to find that two of the younger school had come forward with their views. Some of the 'old dogs' might think this was a new trick, one they were too old to learn. It would appear that for years the industry had gone on without much regard to statistics, but that was not true. In their wisdom the accountants had evolved another technique in place of the old one. The efficiency of the gasworks regarding costs could not be assessed in one formula. They admired the accountants who, without any trouble, could increase production five times over. It was more difficult for the gas engineer to do it. If technical efficiency was not all it should be it was possible that too much of their time was taken up looking after the accountant. It was possible also that some of them who had been in the industry nearly all their lives had taken up that conservative attitude for which the gas engineer was noted and had resolved to stick to the methods they knew, leaving new methods to the younger folks. He could not see how that new technique was any better than the old one. F.E.I. showed the actual cost of making gas and in bigger undertakings they could get a more elaborate idea of cost. Budgetary control was spoken of as if it was a new science, but they had always had it. It had been used in the industry for years.

Mr. E. G. Smith, Glasgow, said it had been established and accepted that there was a saving, but where that saving went in relation to the financial accounts could not be determined. The reason for that was that they were running different time periods, and material control saving was not directly related to financial accounts. They had reached the stage where they were satisfied that there were savings to be obtained and therefore the next step should be to make it as part of their financial system so that they could reconcile the savings to their balance-sheet. One advantage of the scheme was that it had made people cost-conscious, but the savings had to be projected into the financial accounts.

(*Concluded on p.* 515)

GRID SUPPLIES*. . .

Commercial and Industrial Supplies—By W. H. TARN ‡

IN talking about the commercial use of gas, I refer to all the gas used for non-domestic purposes other than that used industrially, or for public lighting, etc. We are told that the allocation of coal in Wales to non-industrial users other than domestic, is 231,000 tons per year and that, if only 1% of this tonnage was converted to gas usage, then the equivalent amount of gas would be of the order of 140 mill. cu.ft. per year. This is surely an indication of the extensive market for commercial gas open to us. I would remind you, however, that the present use of gas as a fuel in the commercial market is greater than is generally appreciated and, in the area of the Wales Gas Board, is some 16.7% of the total gas load. I propose to deal very briefly with four sections of commercial gas usage with which we are all familiar.

(a) *Catering.* I believe the catering trade offers a great expansion in the use of gas, but it must be sought after and, when obtained, must be retained through the medium of a comprehensive and reliable service. The high cost of labour and the stricter measures covering hygiene as called for by the Food and Drugs Act, are factors in our favour.

The trade can be divided into certain classes—*e.g.*, hotels, cafés and restaurants; snack bars and cafeterias and, finally, canteens (schools and industrial). A detailed survey should be made as to the existing equipment, the fuel used, and the fuel requirements for heating; hot water; cooking; boiling water; and any specialized ancillary equipment.

A large hotel may have a solid fuel boiler for heating and hot water, central island solid fuel cooking range, steamers, boilers, boiling tables and the whole gamut of catering equipment, whereas, a small hotel may have a gas range, griller and cafe boiler. At the other end of the scale, the snack-bar would probably have a small cooker, bain-marie, griller and cafe set. In each of these cases there is room for development, either in conversion of the solid fuel boiler, or in provision of a sterilizing sink.

(b) *Fish Frying.* This is an application which, to my mind, should be an obvious gas load. A fish frier needs a fuel to give an immediate quick heat to meet sudden demands, and a fuel to minimize his use of frying oil, gas is therefore submitted as being commercially and practically the ideal fuel for this application. It does possess the advantage of efficient application, is clean, smokeless, requires little maintenance and permits of close temperature regulation.

(c) *Space Heating.* I feel it is true to say that today space heating is one of the greatest sources of waste of fuel, and it is usually considered an inevitable overhead and accepted as such. There is intense competition for the larger heating installations where the price factor becomes all important, but there remain many cases where the allowances for convenience in use, and for costs incurred in storing and burning the fuel become as important as the price factor. For instance, in large city buildings, convenience and cleanliness may outweigh considerations of costs, whereas with industrial buildings cost has first consideration.

It may be that added insulation, say, to the roof, is necessary and as we are dealing with a refined fuel care must be taken to ensure that the operating costs are at a minimum. Radiant heaters have found a ready outlet in the intermittent heating of halls, churches, etc., and rapid developments have taken place in their use during recent years. It is common practice among some representatives to assess the number of radiant heaters required for a particular building on the basis of allowing a certain floor area per heater. This method is not sound and should not be followed unless one has a very wide experience of overhead heating problems.

(d) *Baking.* The tendency has been for expansion in the baking trade to take place in the form of a plant bakery. This is a bakery in which the mechanization of bread baking is what might be called straight line production. With continuous operations, costs are reduced to a minimum and, in these cases, we are faced with real competition from fuel oil, for it usually becomes a straight cost comparison between gas and oil.

I have always been of the opinion that we can offer excellent service in regard to the ancillary equipment of a bakery, irrespective of the baking oven. These are: Hot water for dough mixing, etc., doughnut frying, fondant heater, baking plate, steam requirements for proving and oven steaming.

Industrial Development

We are told that the allocation of coal in Wales to engineering and other industries is 1,662 mill. tons per year (this does not include the iron and steel industry or coke ovens), and if 1% only of this tonnage was converted to gas usage the equivalent amount of gas would be approximately 1,000 mill. cu.ft. per year—almost one-quarter of the present industrial load of the Wales Gas Board. We are told that about 5% of the heat required by industry is provided by gas supplied by the gas industry. Further, the overall thermal requirements of industry are increasing year by year, so that it is obvious that the development of the industrial load represents a vast field. The extent of industrial development is largely controlled by economics, but it is difficult to understand the attitude of the manufacturer when he complains about increases in the cost of fuel, which, in effect, constitutes the smallest percentage of his manufacturing costs.

It is my opinion that the development of the industrial gas load is really the selling of a service, as the customer is not primarily buying a fuel or equipment as such, but rather the results he may obtain by virtue of the equipment he instals. In buying this service the industrialist must have confidence in the industrial gas engineer, and this can be enhanced by intelligent engineering and selling, but can only be held and extended by prompt and efficient service.

The extent of the industrial market is diverse and can only be determined by detailed investigation, which should preferably be done by an experienced and qualified industrial engineer. Every undertaking, however small, has its industrial potential, whether it be the printer, the garage, the chemist, or the small engineering works where some form of heat usage is essential.

There can be no doubt that industrial gas can and does make a great contribution to smoke abatement, and I think this is brought home to us when it is realized that the new works of the Steel Company of Wales, Velindre, will use almost as much gas as that supplied by the Swansea undertaking.

Many of you are aware of those cases in South Wales where gas fired sheet annealing furnaces have replaced coal fired furnaces, the change in conditions of working, the absence of smoke, dirt, etc., has to be seen to be believed.

It would be appropriate at this point to mention fuel economy for this is closely allied to smoke abatement and the conservation of the coal stocks of our country. It is generally recognized that fuel consumption is vital to Britain's national production and, today, the industrialist examines his fuel cost meticulously, and rightly so. Apart from the cost of fuel usefully employed, there is the reliability of the fuel, maintenance of plant, capital cost of plant, percentage of rejects which varies with different fuels, uniformity of products, and the type and cost of labour to be employed. The assessing of the monetary value of this can only be done by the industrialist, but it is here that the industrial engineer, through his experience, can assist and advise on the suitability of plant. He must also know the value of competitive fuels and be able to assess their value in relation to gas, and he must ensure the performance of any plant is maintained at a maximum efficiency. This is, in effect, selling a service which will reap dividends in due time, and is the only way to extend industrial gas sales.

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* From two short papers presented to the Wales and Mon. Section, I.G.E., on April 22, 1955.

‡ Industrial and Commercial Gas Engineer, Wales Gas Board.

. . . A CHALLENGE

Domestic Supplies—By *W. F. EDWARDS* *

I regard grid supplies as a storehouse of goods waiting to be sold, and not solely as a reservoir for meeting existing demands and isolated supply droughts.

Large scale grid mains have been laid and are being laid in North and South Wales, and our Board leads the way in the search for new and additional supplies of gas to flow through these mains. Coke oven gas from new sources, methane from mines, refinery and L.P. gases, together with investigation into the large scale production of gas from various liquid products at the refineries, are all embraced in a magnificent and far-seeing effort to save coal and perhaps the gas industry at the same time. The orthodox and traditional gasworks are fast disappearing, and the accompanying sigh of regret from the engineer at the forfeiture of achievement and at the loss of technical opportunity is understandable. On the other hand, the sigh of the engineer might be one of relief at the easing of a heavy burden.

However, the emphasis of activity has changed. The silence of the works must be compensated by an increased hum of activity on the district. It would be a sad reflection of the changing scene if one were to say today that there is nothing left to do but to sell gas!

Challenge of Grid Supplies

If you will, in imagination, allow the grid supplies to be articulate for a moment, here is the spoken challenge: 'We, the grid supplies, guarantee with reasonable certainty ample supplies of consistently good quality gas, and we challenge you to utilize our resources to the full. We challenge you to put your distribution systems in order so that our resources are not wasted, and to sell—to "engineer" sales.'

The challenge is not ever-lasting. It must be met now and tomorrow, lest in time our grid mains become expensively monumental. The outstanding way—in fact, the way ahead—to meet the challenge of full utilization of grid supplies and to face opposition in the market place leads from the right attitude of mind. The theme of activity for the future is: 'Out and about—the works are dead—long live the undertaking!'

I have tried to say that the great challenge before us is to sell gas, but if the scale of charges is heavily weighted against us we go into battle comparatively unarmed.

The electricity tariff in South Wales is a formidable adversary. Its lighting monopoly enables standby charges to be covered and collected in the initial 5d. per unit, and the following .85d. per unit is powerfully promotional.

However, let us for a moment examine the electricity tariff from a thermal basis and express it as a price per therm.

29.3 Units per Therm
6 Roomed House at 10 units per room
Efficiencies: 100% Gas and Electricity

Electricity:—	1st 60 units per Quarter	at	5d.	per unit.
	All in excess	at	.85d.	do.
Gas:—	1st 2.05 therms	at	12s. 2.5d.	per therm
	All in excess	at	2s. 0.9d.	do.

20 Units per Therm
6 Roomed House at 10 units per room
Efficiencies: Electricity 100%. Gas 68.25%

Electricity:—	1st 60 units per Quarter	at	5d.	per unit.
	All in excess	at	.85d.	do.
Gas:—	1st 3 therms per Quarter	at	8s. 4d.	per therm.
	All in excess	at	1s. 5d.	do.

I think that the time has come to re-open the desirability of our charging on the basis of a gas unit of comparable thermal quantity, and thus be fair to ourselves and give our consumers a true standard of comparison.

Let us imagine a gas unit of 5,000 B.Th.U. and thus take into account the general added efficiency of the utilization of electricity. The resultant two-part tariff at Port Talbot (now 1s. per week and 10.7d. per therm), based on the electricity tariff method of collecting standing charges in the initial heavy commodity charge, would read as follows, and thus we would include and collect our reputed standing charge (1s. per week) in the first 60 gas units.

1st 60 gas units (5,000 B.Th.U. per electrical unit).
Per quarter ... ... 3.14d. per unit.
All in excess ... ... .535d. „

You might say quite fairly that Port Talbot charges do not give a fair comparison. Very well, let us assume that we can offer gas to domestic consumers by way of a two-part tariff of 1s. 6d. per week standing charge, and 1s. per therm commodity charge—the resultant tariff on the basis of our collecting the 1s. 6d. per week standing charge in the first 60 gas units and expressed as gas units is:—

1st 60 gas units ... ... 4.5d. per unit.
All in excess ... ... .6d. „

The figures are fundamentally the result of an arithmetical calculation, and do not take into account the varying financial circumstances of undertakings. The policy of the Board on tariffs would naturally have a great bearing on the calculation if I, or anyone else, was attempting to suggest that these figures should be applied universally. Nevertheless, they are very tempting.

It does not behove me to make strong suggestions on this problem of tariffs, neither would I be rash enough to remain in the arena of this vital and complex scene alone and without being armed with all the relevant facts. But I feel that I shall make some small contribution if I place before you for your consideration the gas unit, or failing that, an optional two-part tariff of 1s. 6d. per week and a commodity charge of 1s. per therm. The commodity charge could be related, if necessary, to certain blocks of existing flat rate commodity charges.

There has been of late a pronounced and satisfactory trend towards the engagement of additional salesmen. This trend must be encouraged. We are all doing good work in the training of pupils and apprentices, but unless gas is sold in increasing quantities with consequent technical and gas fitting activity, the knowledge and skill acquired by the pupils and apprentices might too, be in danger of becoming monumental. We all agree most warmly that the specialized activities of our Board are outstandingly first class, but I will say with one exception—sales. The enthusiasm, pride, and loyalty of us all will go out to meet the challenge of grid supplies, but if such traditional attributes were embraced and set on a new inspired course of action the challenge could be met full face.

Another point is that of 'unemployed gas points.' There is no doubt of their existence. Sometimes we very faithfully instal five points per house, sell a cooker, leave four points, and that is that. I would suggest (I have already done so to myself) a strong and determined sales assault on the position. The points should not be left to act as earth connections for radio and television. That thought is not ridiculous as I well know. Eighty to 85 therms per annum is a poor reward for the large capital outlay required for housing schemes.

ADMINISTRATIVE APPROACH—*from p. 513.*

He would also suggest that the target figures and the estimates for each year should be the same so that the estimates could be measured against actual working costs at any time during the year. They should remember the old axiom: 'A price is a policy, an estimate is an opinion, but a cost is a fact.'

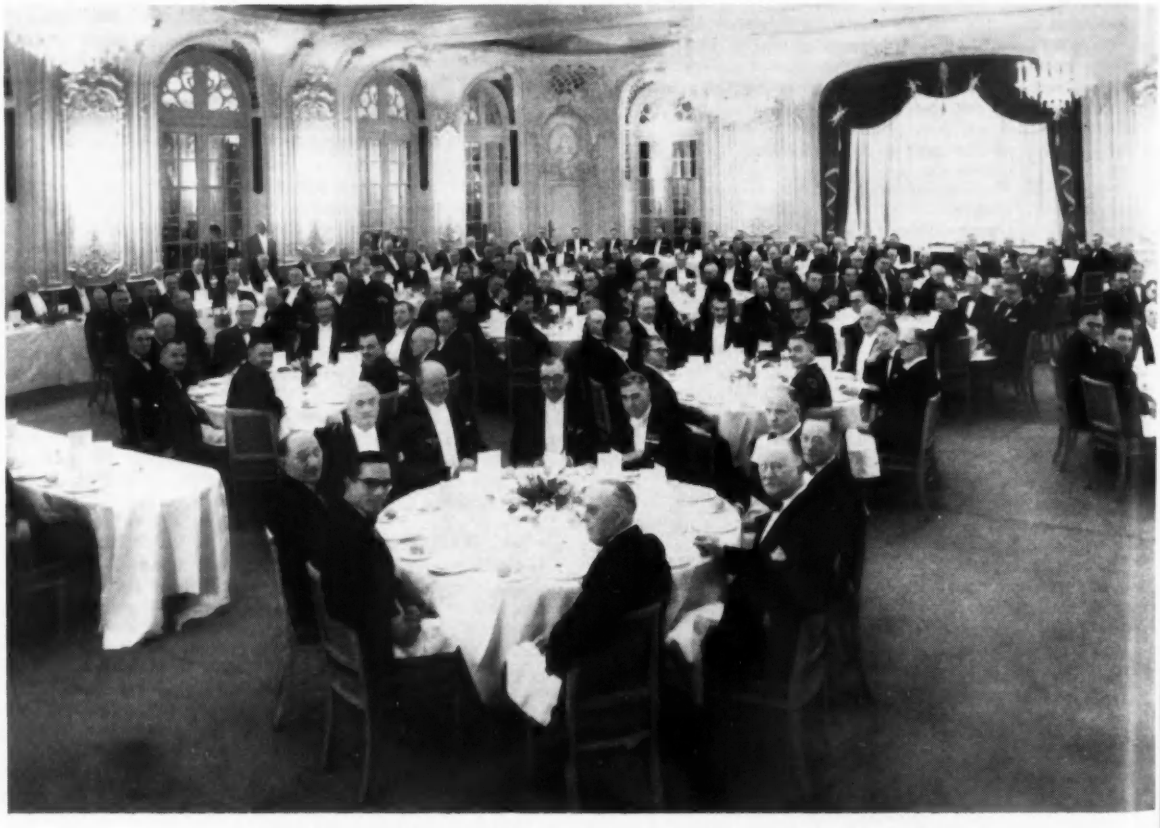
Mr. Elgin, replying to the discussion, pointed out that in many works the coke and breeze were not sorted out. The system was a tentative one, with a view to future development. Generally only one test run was made and where there had been more it was due to some reason connected with plant. He agreed that a fair standard should be set and it had to be shown that it could be achieved. The idea was not so much to set a standard as to get people thinking about it. The cost of the system was about .002d. per therm and that figure covered the cost of other services. One method of ironing out differences between one works and another was to express the achieved efficiency in terms of standard efficiency, but that was not done to any great extent. One set of statistics should serve both the accountants and the technicians.

* General Manager and Secretary, Port Talbot Undertaking, Wales Gas Board.

Jubilee of the Society of British Gas Industries

Celebration Dinner at the Savoy

The Society of British Gas Industries celebrated the 50th anniversary of its foundation at a dinner at the Savoy Hotel on May 18, presided over by Sir Ernest Smith, C.B.E., President, and attended by some 200 guests, notably Sir John Maud, G.C.B., C.B.E., Permanent Secretary of the Ministry of Fuel and Power, Sir Harold Smith, K.B.E., D.L., Chairman of the Gas Council, Mr. Henry H. F. Jones, M.B.E., Deputy-Chairman of the Gas Council, the Chairman and Deputy-Chairman of several of the area boards, Mr. W. K. Tate, M.A., President of the Institution of Gas Engineers, Dr. W. T. K. Braunholtz, O.B.E., Secretary of the Institution, and representatives of the Ministry of Fuel and Power.



The dinner at the Savoy Hotel to celebrate the Jubilee of the S.B.G.I.

SIR HAROLD SMITH proposed the toast of the Society, which he said was born during the less inhibited and more peaceful days of the Edwardian era; for it was on the last day of the Gas Exhibition at Earl's Court in 1904 that discussions began which were to result in that dinner being held. The relations between gas engineers engaged on gas production and supply and those on the contracting and appliance manufacturing side of their industry had not always been as close as they were today. At the beginning of this century, when the Incorporated Gas Institute and the Incorporated Institution of Gas Engineers amalgamated to form the Institution of Gas Engineers, there was a strong prejudice against the admission to the Institution of anyone engaged in the manufacture of plant or appliances, but those conditions no longer applied, and when the Institution received its Royal Charter in 1929 membership was thrown open to all gas engineers, irrespective of the nature of their work or their employment, provided that they held the necessary qualifications in the field of gas engineering.

Value of Close Collaboration

For the past quarter of a century the two sides of the industry had worked more closely together, and there was no doubt that closer collaboration had been to the advantage of the industry as a whole and to its consumers. Nor had the nationalisation of the supply side of the industry removed the need for close working between the two branches. New methods of gasmaking, such as the gasification of heavy oils, the use of petroleum gases, and so forth, had brought their own individual problems in plant design. Nationalisation had led to larger units and consequently the area boards might embark on more detailed planning than generally was done before vesting day except by a few of the larger undertakings. Nevertheless, if the services of the industry to the community were to be maintained at a high level of efficiency and they were to keep pace with their competitors, the closest co-operation between all engaged in the industry was vital.

At a general meeting of the Society in 1906, Mr. Dugald Clerk (later Sir Dugald), with whose name the development of the internal combustion engine was for all time identified, was in the Presidential Chair. He had been introduced to the members by Mr. Charles Clare, the then Chairman of the Council, and the words Mr. Clare used were as applicable in 1955 to the present President, Sir Ernest Smith, as they were in 1906 to Mr. Clerk. Mr. Clare said: 'The Council had a great deal of thought before it could spot the right man for the position. The man upon whom they set their desire was one who was well known throughout the industry, one not only possessed of technical and

commercial knowledge but, if possible, one possessed of perennial youth.'

Two Secretaries in Fifty Years

Youth also seemed to be the quality of the Society's Secretary, for only two people had served in that capacity during the last 50 years. Mr. A. L. Griffith was Secretary from the Society's birth until he retired in 1935. He was succeeded by Mr. M. V. Burt, whose capabilities and charm needed no stressing by him. The Society was fortunate too in its Chairman for this Jubilee year. Mr. James Simpson had spent all his working life in the industry and brought an extensive knowledge to the problems which confronted them on the contracting side today. Then there was Sir Frederick West, who was a member of the Provisional Committee which acted as midwife, as it were, at the birth of the baby Society fifty years ago. Sir Frederick had seen that nursling grow up strong and healthy. They rejoiced that the years seemed to lie lightly on Sir Frederick himself as they did on the Society.

As to the future, those on the supply side were having to meet a tremendous challenge. For nearly 150 years they had depended on ample supplies of the right type of gas coal from which to make gas. That coal had become more and more scarce, but they were not throwing up their hands in despair. They were seeking new methods of making gas. They were treating the shortage in the supply of coal and the increase in price as a challenge, and he appealed to the members of the Society, as manufacturers of appliances, to help them in their fight.

Tribute to Arthur Bezant

THE PRESIDENT, responding, said collaboration between the nationalised side of the gas industry and the contracting side was one of the finest things that could have been done to stimulate the continued enterprise of the contractors in recent years. He knew there had been a feeling that some of the independent boards with virile chairmen and members might feel that they were big enough to be independent of the contracting side, and that there were many things that they might with great pride do for themselves. He had met a good many important people in the industry, but he had never heard that advocated. It might well be that there had been conversations, but whether in regard to repairs to retorts or repairs in connection with distribution or anything else there was no one who had heard of such conversations. He had not heard of them, and he believed that to attempt to carry out such a change would be a form of administrative and productive insanity.

Recalling the early history of the Society, Sir Ernest read the following extract from a letter containing some information about what had occurred before 1950:—

'Sir Dugald Clerk, proposing Mr. Charles Clare's health at the coming of age party of the Society in 1926, remarked that in 1904 Mr. Arthur Bezant, who was present at the coming of age party, wrote in the "GAS JOURNAL" a series of articles on the necessity for the formation of such a Society as theirs, as complementary to the Institution of Gas Engineers. Mr. Charles Clare at once took up the idea, and after hard work got a Council together. Mr. Clare in his response, typically modest, said he was simply the instrument by which the Society was set afloat. The "GAS JOURNAL", backed up by several of the exhibitors at the old Earls Court Exhibition of 1904, expressed a strong view that such a Society should be formed; and he was strongly indebted to Mr. Bezant, not only for his advice and counsel in those early days as regards the preliminaries of the Society, but also for his introduction to Sir Dugald Clerk'.

Impressive Figures

The annual value of plant, equipment, and appliances supplied to the British gas industry by the Society's members was probably not less than £60 mill., or possibly more. About 45,000 people were estimated to be employed by the Society's members on that work. British initiative had taken the lead both in the establishment and in the technical development of the gas industry in many countries. The present value of exports of plant, equipment and appliances was about £3 mill. per annum. Members of the Society had held and continued to hold the initiative in progress by adopting an active research and development policy. Expenditure under that heading was well in excess of £250,000 per annum. It held the initiative also by following up-to-date manufacturing methods; by correlating experience gained within the industry; by acquiring foreign improvements; by adapting experience gained in other countries; and by the expenditure of a sum in excess of £750,000 annually on advertising, publicity, and exhibitions.

'I have,' concluded Sir Ernest Smith, 'an unbounded faith in the future of the gas industry, and I am not scared about this question of the shortage of gas coals. I think the strongest pressure should be brought to bear on the authorities to see that real gas coal of lower ash content which is being used by the domestic consumer, by the railways, and by the coke oven industry, should, partially at any rate, be used by the gas industry.' It could be done without very much trouble if there was the will to do it.

The Guests

MR. JAMES SIMPSON, Chairman of the Society, proposing the toast of the guests, said 50 years of close association between the Society and the gas supply industry had emphasized the need for a body to represent each part of their industry so as to enable joint consultation to take place on matters of common interest. He had deliberately said each *part* of the industry and not each side, because to him the word 'side' gave the impression of being in opposition, whereas in his view the two parts were complementary and the one would find it difficult to carry on efficiently without the other. They were pleased to have as their principal guest, Sir Harold Smith, Chairman of the Gas Council. It was in no small measure due to Sir Harold, with his wide vision, his long experience, and his clear understanding of the functions of both parts of the industry, that since nationalisation such close contact had been maintained on the many matters of mutual interest. With Sir Harold's approval the Joint Consultative Committees, which were in operation between the gas supply industry and the S.B.G.I. prior to nationalisation, had been continued and expanded. These met regularly to discuss matters of common interest relating to the domestic uses of gas, the industrial uses of gas and to research, while equally valuable work had been and was being done by the Joint Committees on Refractories Specification and Conditions of Contract.

Good Leadership

They appreciated, too, the opportunity afforded them by the Gas Council of sending some of their young men to attend the management courses at Brooklands College. It had for long been universally accepted that the young men of the industry must have a high standard of scientific and technical training, but only more recently had it been recognised that specialized training was necessary in the art of management. Without good leadership neither a firm nor an industry could prosper and it was gratifying that Sir Harold and the Gas Council were taking such a personal interest in those new management courses which would in due course prove of immense value to the industry as a whole.

They equally welcomed the Deputy Chairman of the Gas Council, Mr. Henry F. H. Jones; senior officials of the Gas Council—the 'backroom boys' of the gas industry—although some must have 'front room' tendencies if they were to ensure that the industry did not hide its light under a bushel; the Chairmen and Deputy Chairmen of several of the area boards; and Mr. W. K. Tate and Dr. W. T. K. Braunholtz, President and Secretary respectively of the Institution of Gas Engineers. He extended a warm welcome to the Editors of the technical Press and to the representatives of the general Press. At all times and on all occasions the technical journals had shown an unfailing interest in the activities of the S.B.G.I. and, on behalf of the members, he expressed appreciation and thanks for that and acknowledged that they were extremely well served by the quality of their technical Press and owed them a deep debt of gratitude for the invaluable work they did on the Society's behalf.

Lastly, but by no means least, he welcomed representatives of the Ministry of Fuel and Power in the persons of Sir John Maud, the Permanent Secretary, and two of the senior officials of the Gas Division, Mr. J. S. Smith, and Mr. Owen Francis, Under-Secretary. There was little he could say about Sir John Maud which was not already known. He had had a brilliant career in academic life and public service, leading to his appointment as Permanent Secretary of the Ministry of Education at an early age and to a

similar appointment at the Ministry of Fuel and Power some three years ago, in succession to Sir Donald Fergusson. He had shown great versatility in many directions, especially public speaking, and had addressed meetings, at one end of the scale, of the Public Morality Council and, at the other end of the scale, of gas engineers. In his present capacity he was principal official in the Ministry responsible for four major industries, coal, oil, gas and electricity, and in spite of the importance of the other three, he found time to take an interest in gas and had attended many gas functions.

Contribution to War Effort

SIR JOHN MAUD, G.C.B., C.B.E., Permanent Secretary, Ministry of Fuel and Power, responding for the guests, said reference had been made to the gas industry's contribution in the first world war, and he wanted to take the opportunity afforded by the Society's Jubilee celebrations to thank its members for what they did in the second world war. In looking to the future of the gas industry he felt they were right not to rely on either the failure of nuclear power programme or the availability of good caking coal to see the industry through the next ten years. It was because he knew that nobody in the room did rely on either of those things, both of which seemed to be equally unlikely, that he felt they could face the future in good heart.

He believed, in common with all his friends in the fuel and power field, that the gas industry must face the alternatives of death or glory, and he had no doubt at all, particularly when he thought of the strength and the cohesion of all the interests represented at that gathering, that glory was going to be the verdict when in 50 years the society celebrated its centenary. They were not going to rely on either the failure of the nuclear power programme or the availability of good caking coal, but on three much more likely and valuable things—ingenuity, imagination and team work; ingenuity in finding new ways of using bad coal, in which members of the Society as representing the manufacturers of plant had given such a splendid lead during the years in which he had had the privilege of being associated with the industry, in finding how they could make do with inferior types of coal, and make better use of coal than any of them in 1939 would have believed possible. The appliance manufacturers equally had shown ingenuity in finding ways of burning bituminous coal without smoke and in other ways, and in not taking refuge in abusing that other nationalised industry, coal.

Imagination and Natural Gas

Imagination had been displayed by the industry in going out for things like natural gas, liquid methane, and all sorts of other figments of the imagination. In a Royal Commission on coal supplies which was sitting when the Society of British Gas Industries was founded in 1905 the most powerful evidence was given that natural gas was available in Sussex, that it was available in such amounts as to be a substitute for coal, and that it would be worth while looking for it, although they did not say how much was there. Now after another 50 years the gas industry was chancing its arm in a renewed search for natural gas. And there was plenty of other examples of imagination.

Last but equally important was team work. There was team work between the nationalised part of the gas industry and that other nationalised industry, coal; and between those in the nationalised part of the gas industry and the members of the Society who had their unique and essential contribution to make to the common task. There was also team work between the gas industry and the coke ovens and the steel industry, and even with his friends in the Ministry of Housing and Local Government who might have something to offer in the way of subsidy for a clean air policy and other incitement to maintain a two-fuel industry.

Sir Ernest's Greatest Work

DR. HAROLD HARTLEY, C.B.E., proposed a vote of thanks to Sir Ernest Smith for presiding. Last year their President and himself had their own little celebration of the Jubilee of their friendship which started at Manchester University in 1904. So great was Sir Ernest's work in the first world war that it was not surprising that he should have become associated with one of their foremost firms of contractors. He went to Woodall-Duckham and as Technical Director took a great part in the development of that magnificent organisation. Some of his greatest work was done there, and in due course he was selected to act as Director General of Gas Supplies during the war. He had a high reputation as a technologist and although he was not now directly concerned with the industry his heart was still there and certainly his interest was still in the carbonizing industry.

Gas at North Eastern Exhibitions

The York/Harrogate Group of the North Eastern Gas Board had a prominent exhibit at the exhibition organized by the West Riding Institute of Handicraft Teachers recently. The exhibition was held in the Harrogate Grammar School and comprised a display of students' work and stands by various commercial organizations. Nine thousand people attended the exhibition, which was open for ten days. The Board's exhibit was housed in a classroom and spotlighted careers in the gas industry, assisted by demonstrations from a gasfitter. There was also an attractive display of appliances, including demonstrations of gas/electric washing machines.

'Modernization of Obsolescent dwellings' was the subject of a residential course held by the York Institute of Architectural Study recently. An exhibition, which was held in conjunction with the course at York Public Library, had as one of its principal exhibits the North Eastern Gas Board's stand featuring 'Operation Rescue.' Other exhibitors included the Coal Utilization Council, and Allied Ironfounders, Ltd. The exhibition was open to the public.

'Special Speaker' Meeting

The 'Special Speaker' meeting of the Northern Junior Gas Association was held in the Demonstration Theatre, Darlington, on May 12. Mr. J. T. Haynes, Immediate Past President of the Institution of Gas Engineers, addressed the meeting on "Highlights of my Year as President of the Institution.' This talk was illustrated by fascinating colour films of incidents at conferences held in a number of countries in Europe.

The Association was particularly gratified at having this address from Mr. Haynes since by an unfortunate clash of dates he was prevented from meeting the members during his Presidential year.

Mr. J. C. Graham (Newcastle) and Mr. G. E. Haddon (Stockton), in proposing and seconding a vote of thanks to Mr. Haynes, referred to the pleasure of the members at having been addressed by Mr. Haynes in spite of losing their opportunity the previous year.

Mr. H. W. Waiton (Howden) proposed a vote of thanks to Mr. P. Wilson, Divisional General Manager of the Darlington Division, Northern Gas Board, for his hospitality and for providing tea at the conclusion of the meeting.

Catering Festivals in the South West

In co-operation with various organizations connected with the catering industry, the South Western Gas Board recently sponsored two festivals—a Gastronomic Festival of the South West, held in the Town Hall, Torquay, on May 4-6, and an Epicurean Festival, held in the Montpellier Pavilion, Cheltenham, on April 19-21. At the former 200 entries were received in the competitive classes, and 3,000 visitors attended. Gas appliance manufacturers were well represented, and in addition to excellent editorial coverage by local press and the national catering press, the occasion was the subject of broadcasts in the B.B.C.'s West of England regional programme and in the television broadcast 'Westward Ho!'

At Cheltenham, 93 entries were received, and the festival was visited by 750 people. Local press publicity was good, and the festival was featured in the B.B.C.'s Midland regional programme 'What's On?'

The same exhibition material was used on both occasions, and valuable assistance was rendered by the Board's Home Service Department.

Mainlaying and Pipework in the South West

Members of the South Western Section of the Institution of Gas Engineers met at the Rougemont Hotel, Exeter, on May 11, mainly to witness the documentary film 'Mainlaying and Pipework' presented by William Press & Son, Ltd. Prior to the general meeting the members and guests were entertained to luncheon by the Chairman, Mr. C. H. Chester, C.B.E., and Members of the South Western Gas Board.

MR. W. B. CLARIDGE, the Section Chairman, in welcoming the representatives of William Press & Son, Ltd., referred to the film which would be presented later in the meeting, and lantern slides by subsidiary companies. He referred to the extensive programme of main laying effected in the area of the South Western Gas Board since 1949, involving some 1,000 miles, of which approximately 250 miles would be laid this year. The considerable interest involved in the film, etc., was evident by the large attendance at the meeting, and this interest was substantiated in the number of questions raised in the subsequent discussion.

The firms and representatives who introduced the film and lantern slides and replied to questions were William Press & Son, Ltd. (Mr. W. H. G. Roach, Managing Director, and Mr. J. R. Hart, Welding Engineer), the General Descaling Co., Ltd. (Mr. L. W. Webb, Managing Director), and Metal & Pipeline Endurance, Ltd. (Mr. A. C. Vivian, Managing Director).

DR. ARTHUR MARSDEN, M.B.E., Area Scientist, said although some people seemed to think that cathodic protection could bring all their pipeline corrosion troubles to an end, there was nothing magical about it, and there was a lot of uniformed talk about it. Cathodic protection should only be applied when all the ordinary means of protection had been applied first. It was not something to take their place, but a supplement to them.

MR. A. C. VIVIAN, in reply, said he agreed there was nothing magical about cathodic protection. He felt it was important to study it carefully and so far as his Company was concerned it was their aim to provide a staff expert in making the measurements and assessing the conditions, and honestly declaring whether or not cathodic protection was needed.

Answering questions, Mr. Vivian said that even where lead or rubber packings were used in pipe joints there was generally enough contact for cathodic protection to be successful.

Replying to Mr. P. J. Whitehead (Swindon), he said that even where the nature of soil changed rapidly from point to point it was possible if a customer would pay for a certain amount of survey work to make a pretty close assessment of whether or not a pipeline needed cathodic protection. Local history and local knowledge were used in helping to make the assessment.

Replying to Mr. A. G. Holtam (Cheltenham) he said that if the number of leaks in a pipe went up steadily year after year, it was obvious the pipe had either to be renewed or protected. It was a question of economics in deciding what to do. Oil company experience was that cathodic protection stopped further leaks from developing.

A description of the way in which portable equipment was used to make radiographs of leaky welded joints with radioactive isotopes, thus enabling faults to be detected and repaired was given by Mr. J. R. Hart.

Mr. L. W. Webb, Managing Director of the General Descaling Co., Ltd., told the meeting that normally 230 yards of pipe could be descaled in one stretch, a scaling tool being rotated inside the pipe at the end of a rod to which extension pieces could be added as required.

In cases where the cost of opening up was high his Company had done as much as 578 yards at once, boring from each end. It took 18 hours of boring.

Mr. Webb gave an assurance that there was no need to fear damage to ferrules. It was only when a ferrule was badly inserted or a connection badly made that they had any trouble. If they did break a descaling tool they could generally reclaim it within 20 minutes.

Answering Mr. E. V. Dunn (Devizes), Mr. Webb said that only 3-4 gal. of water per minute were passed through a pipe during descaling. A standard fire hose was generally used for this purpose.

Thanks to William Press & Son, Ltd., for showing the film, and to the speakers were expressed by Mr. C. R. Ingham, Production Engineer, Bristol/Bath Division.

The CHAIRMAN paid tribute to Mr. H. H. Brown, former Exeter Sub-Divisional Manager, and Mr. F. J. Worthington, Honiton, whose resignations due to retirement were accepted. He said Mr. Brown had done invaluable work for the Institution and had been Chairman for a number of years of the South Western District Education Committee.

New Members elected were Messrs. W. J. Chadder (Director, Woodall-Duckham Construction Co., Ltd.), A. E. Morris (West's Gas Improvement Co., Ltd., C. O. L. Division, London); K. Morris-Ashton (Bristol/Bath Division), and T. H. Barrett (West's Gas Improvement Co., Ltd., site engineer, Stapleton Road Works, Bristol).

Mr. Claridge welcomed Mr. C. H. Chester. Apologies were received from the President of the Institution, Mr. W. K. Tate, and the Secretary, Dr. W. T. K. Braunholtz.

READING ENTERPRISE

A new demonstration theatre was opened at the Southern Gas Board's offices in Friar Street, Reading, on May 11. The Mayor and Mayoress of Reading (Councillor and Mrs. A. E. Smith), representatives of the Southern Gas Board and the Southern Gas Consultative Council, Mrs. Eileen Murphy, Home Service Officer of the Gas Council, and others were present. The guests were welcomed by Mr. A. G. Brown, Group Manager.

Mr. A. R. McBain, Chairman of the Southern Gas Board, stressed the value of a practical demonstration theatre to women. Here, he said, they could learn the technical side of cooking with the expert advice of home service advisers, as well as seeing all new gas appliances in operation.

Mrs. Murphy underlined the fact that in what is mainly a man's industry, women were the best customers. She stated that three-quarters of the gas made was used by women. She described gas as the home help who lived in, with the added virtue of being unable to answer back. More than 10 mill. women used gas cookers, and the popularity of gas water heaters was expanding daily.

The opening ceremony was performed by the Mayor of Reading, who is also a member of the Southern Gas Board.

Miss N. Davies, home service adviser, assisted by Miss Weaver, showed how to prepare a meal for a festive occasion which, by reason of gas appliances and careful planning, the hostess can prepare in advance and enjoy the party without being tied to the kitchen. The attractive meal was put on display to the audience. Afterwards Miss Davies presented a bouquet to the Mayoress.

The new demonstration theatre is in contemporary style. With grey-flecked walls and a crimson star-studded ceiling it forms an attractive setting.

National Benzole Officers

At the second annual general meeting of the National Benzole and Allied Products' Association (N.B.A.) at the Grosvenor Hotel, Buckingham Palace Road, S.W.1, on April 27, the following officers were elected:—

President: A. K. Steel (National Coal Board). *Vice-President:* L. W. Blundell (North Thames Gas Board). *Executive Committee:* Dr. M. Barash (East Midlands Gas Board), H. H. Bates (National Benzole Co., Ltd.), J. Colligon (Dorman, Long (Chemicals), Ltd.), A. S. Davies (Guest, Keen Iron & Steel Co., Ltd.), F. W. O. Doddrell (National Coal Board, North Eastern Division), C. M. Frith (South Yorkshire, Chemical Works, Ltd.), R. T. Hayes (United Coke & Chemicals Co., Ltd.), F. A. Jackman (Carless, Capel & Leonard, Ltd.), C. J. Johnson (North Thames Gas Board), D. G. Moody (National Coal Board, East Midlands Division, A. Slater (Staveley Iron and Chemical Co., Ltd.), J. B. Vickers (Yorkshire Tar Distillers, Ltd.). *Secretary:* W. E. Cartwright.

North of England Section I.G.E. Annual Meeting

On the occasion of the annual general meeting of the North of England Section of the Institution of Gas Engineers members and their ladies assembled in the Demonstration Theatre of the Tyneside Division of the Northern Gas Board, on Thursday, May 5, and were entertained to coffee and a gas industry film show. At the completion of this they transferred to the Old Assembly Rooms, Westgate Road, Newcastle upon Tyne, for luncheon. After the Loyal Toast, the Chairman submitted the toast of the Ladies and Guests, which was replied to on behalf of the ladies by Mrs. W. R. Garrett, and on behalf of the guests by Mr. A. G. Higgins, the Assistant Secretary of the Institution of Gas Engineers. Following upon this, Mr. W. Sutcliffe proposed the toast of the Northern Gas Board, and this was followed by the response of Mr. E. Crowther, Chairman of the Northern Gas Board. At the conclusion of the luncheon, the ladies divided into two parties, one of which visited the works of Messrs. Scott & Turner, Ltd., and the other the works of Messrs. Thos. Hedley & Co., Ltd.

Simultaneously, at the conclusion of the luncheon, members assembled for the business meeting. At this meeting members stood to order in respect of the deaths of Mr. Arthur Clement Hovey and Mr. W. R. Weldon. The Chairman referred to the splendid work of the late Mr. A. C. Hovey, for this Section generally, and its younger members in particular. A contribution of 20 guineas from the Section's funds was made to the Benevolent Fund of the Institution of Gas Engineers. Reports were received from Mr. F. Wilson—Benevolent Fund Representative, Mr. W. R. Garrett as District Member of the Council of the Institution of Gas Engineers, Mr. W. Sutcliffe—as Chairman of the District Education Committee.

After the Chairman had presented his address, Mr. J. R. Cleator proposed a vote of thanks.

Election of Officers

In connection with the election of officers, Mr. W. Sutcliffe was unanimously elected Chairman, and inducted by Mr. W. R. Garrett who presented him with the Chairman's badge. Following upon this, Mr. Sutcliffe presented a framed certificate to Mr. Garrett to commemorate his year of office. Nominations were made in accordance with the notice of meeting, with the addition of the name of Dr. G. Milner to the Ordinary Members of Committee—making three instead of the two mentioned on the circular. Mr. W. Sutcliffe was appointed as representative to serve as District Member on the Council of the Institution of Gas Engineers for the year 1955-56. Lieutenant-Colonel K. B. Baldwin, M.B.E., T.D., was appointed as a trustee of the Arthur Clement Hovey Educational Trust, to succeed the late Mr. A. C. Hovey. Messrs. W. Sutcliffe, A. Field and F. J. Webster were elected as the three representatives on the District Education Committee. A vote of thanks to the Chairman, Officers, Committee and Auditors for their services during the past year was proposed by Mr. G. E. Haddon; Mr. F. J. Webster replied on behalf of all concerned. During the meeting a telegram of good wishes was received from Mr. G. E. Anderson, who is at present in America. At the conclusion of the business meeting and the visits, the ladies and gentlemen re-joined in the Demonstration Theatre of the Northern Gas Board, Newcastle-upon-Tyne, for tea. A vote of thanks to Mr. W. Sutcliffe, Divisional General Manager of the Tyneside Division, Northern Gas Board, for the hospitality and facilities arranged, was proposed by Mr. W. R. Garrett and unanimously acclaimed by the members.

YORKSHIRE JUNIORS PRESIDENT'S DAY AT ROBERT DEMPSTERS

Members of the Yorkshire Junior Gas Association, under the Presidency of Mr. D. C. Henderson (Headquarters, North Eastern Gas Board, Leeds) were entertained to lunch by Robert Dempster & Sons, Ltd., of Elland, at the George Hotel, Huddersfield, on May 11. After the lunch Mr. Henderson welcomed Dr. R. S. Edwards (Chairman, North Eastern Gas Board), Mr. A. H. Barrington (President, Manchester Juniors), Mr. H. Johnston (Immediate Past-President, Manchester Section, Institution of Gas Engineers), and Mr. Norman Hudson (Chief Commercial Officer, N.E.G.B.).

DR. EDWARDS, in proposing the toast of Robert Dempster & Sons, Ltd., said that they were an old and respected firm in the gas industry. He was sorry so many people were absent; that was inevitable owing to the strike in the coalfields. He then referred to Board prospects. He said they were having great difficulties with increasing costs and it was up to everyone to do everything possible to increase productivity.

MR. B. C. MORTON (Managing Director, Robert Dempster & Sons, Ltd.), replying, said it was a great privilege to entertain the Yorkshire Juniors, the last occasion being in 1927 in company with the Manchester Juniors. He said everyone was conscious of the change that was taking place in industry and he hoped that the gas industry would not be found wanting in its endeavours to meet changing conditions.

MR. DAVID HENDERSON then read his address, to which we shall refer in a later issue.

Members proceeded to Rose Mount Ironworks and made a tour of Robert Dempster's works, where they found much of interest and were particularly impressed with the space and orderliness of the layout. Tea was served in the canteen, after which MR. A. J. WINTER (Group Sales Manager, Leeds) proposed a vote of thanks to Mr. Morton, Mr. Aspinal and the staff of Dempsters for the arrangements made for them. MR. MORTON replied briefly.

Among those present at Rose Mount Iron Works were (left to right) E. Aspinall (Director, Robert Dempster & Sons, Ltd.), S. Davies (Past President, Yorkshire Juniors), B. C. Morton (Managing Director, Robert Dempster & Sons, Ltd.), Dr. R. S. Edwards (Chairman, North Eastern Gas Board), D. C. Henderson (President, Yorkshire Juniors), and A. H. Barrington (President, Manchester Juniors).

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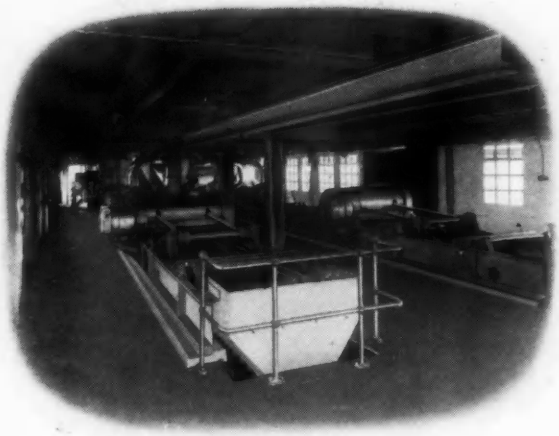

A recent installation at the Waddon Works, Croydon, of the South Eastern Gas Board; incorporating conveyor system feeding two lines of Scalping and Grading screens and coke cutters, each line rated at 30 T.P.H. Storage Bunkers of 880 tons capacity. Eight debreezing screens provide for coke bagging, draw off conveyor and screen for bulk debreezing.

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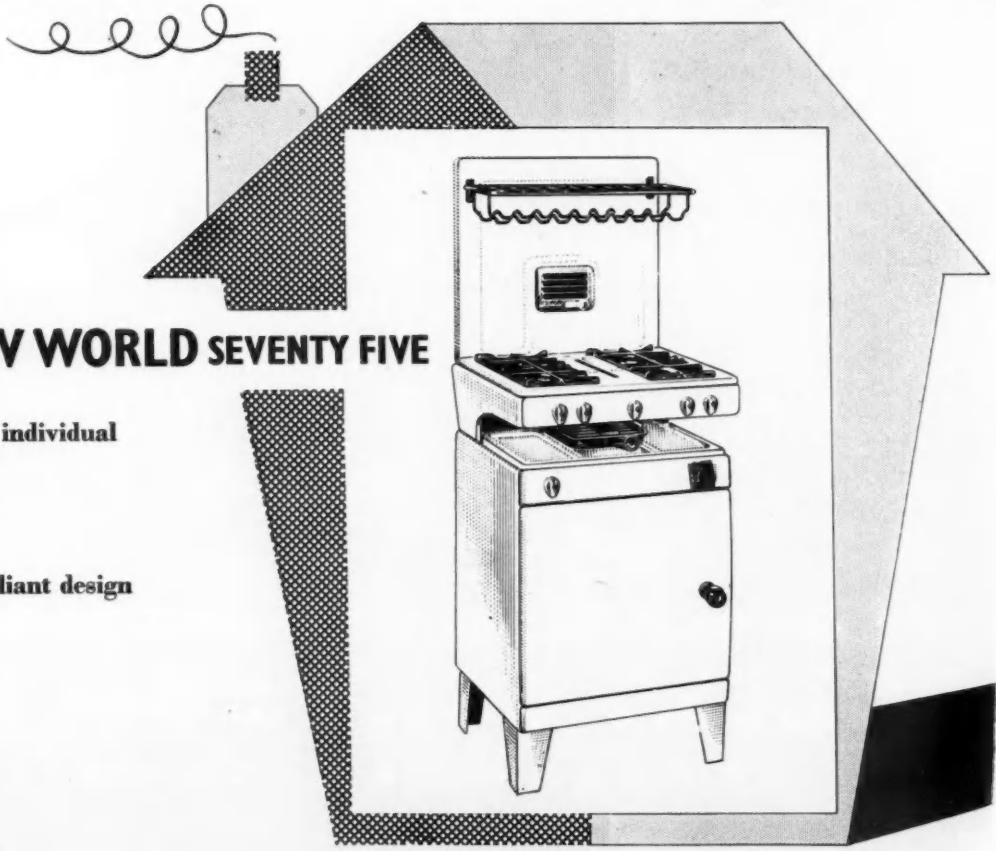

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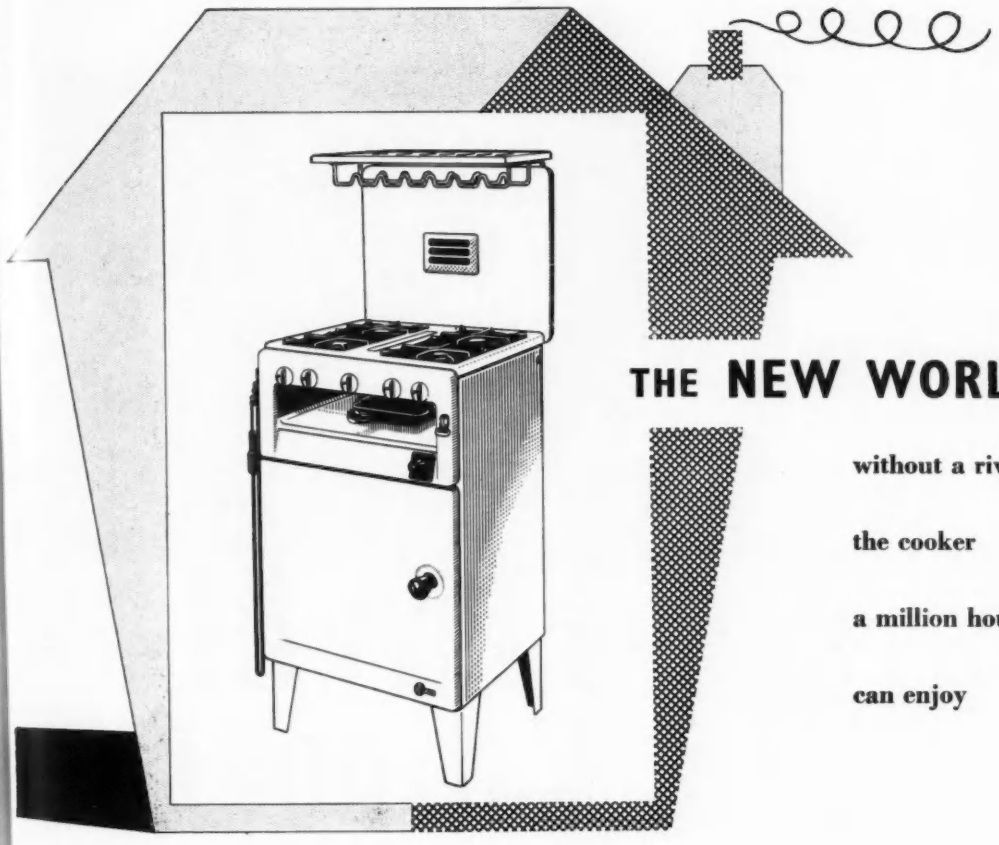

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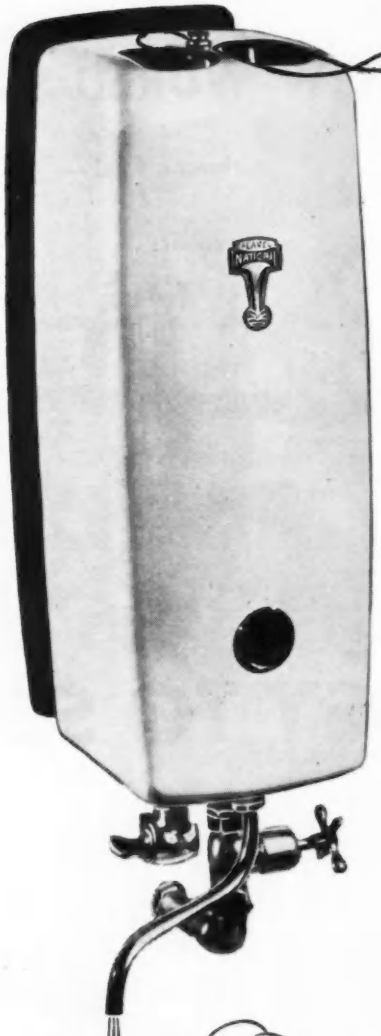

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MIDLAND JUNIORS JUBILEE DINNER

At the Jubilee dinner. Left to right: The Mayoress of Wolverhampton, the Mayor (Alderman L. J. Woolridge), Mr. Sydney Smith, (Chairman, East Midlands Gas Board), Mrs. H. Reynolds, Mr. G. Le B. Diamond (Chairman, West Midlands Gas Board), Mr. H. J. Reynolds (President, Midland Juniors), Mr. S. C. Crathorn (Senior Vice-President) and Mrs. Crathorn.

Members of the Midland Juniors Gas Association, wives and friends, met in the Wulfrun Hall, Wolverhampton, on May 7 to celebrate the Association's Jubilee and to honour the President, Mr. H. J. Reynolds.

MR. SYDNEY SMITH, Chairman of the East Midlands Gas Board, proposed the toast of the County Borough of Wolverhampton, and gave a brief account of the history and growth of Wolverhampton.

The Mayor of Wolverhampton, ALDERMAN L. J. WOODRIDGE, J.P., responded. It should be recorded that the Mayor and Mr. Reynolds were both sergeants in the Sherwood Foresters in the 1914-18 war and have been close friends since then. The Mayor warmly congratulated Mr. Reynolds on being President during Jubilee Year.

MR. G. LE B. DIAMOND, C.B.E., Chairman of the West Midlands Gas Board, proposing the toast of the Midland Junior Gas Association, said that the gas industry in the Midlands was proud of the Association and of the contribution its officers had made in maintaining the traditional high standards of the industry throughout this remarkable period of industrial development. Many men had sprung from the ranks of the Midland Junior Gas Association to a high place in the industry, and they would be the first to say that they owed something to the years of development and debate at their meetings. Their transactions contained many papers and addresses of high quality. They were delighted to see the first President, Colonel F. J. Bywater, C.B.E., M.C. In his Presidential Address of 50 years ago Colonel Bywater had proved himself to be a remarkably accurate prophet. Among the questions he postulated there was one in which he speculated on the next step in the heat treatment of coal, and answered it by saying he thought that the industry was heading towards complete gasification in producers working with oxygen. Another Past President who provided an evergreen link with the inauguration 50 years ago was Mr. A. W. Smith, who became one of the most highly esteemed leaders of the gas industry, and was regarded with affection by all who had known him. The President of 1911, Mr. R. J. Rogers, who was also present, was known throughout the industry as 'R. J.' Mr. Rogers had given great service to the gas industry and had enriched and endowed everything he had touched.

A Jubilee, Mr. Diamond continued, was not only a cause for celebration and congratulation. It provided an excuse for looking back on past endeavours, for reflections and reminiscences. He gave some examples of the cost of living 50 years ago. Even at that time it was said that gas was a dying industry, and the croakers had said it ever since. There was, however, nothing to fear. They would need all the energy that could be harnessed to the service of men as far as could be seen into the dim distant future. There was a long and honourable journey for the gas industry before it was supplanted by other forms of energy. They had every reason to be concerned at the enormous increase in costs, and, in particular, at the discrimination which had been applied to their industry in the pricing of coal.

MR. REYNOLDS, replying, thanked Mr. Diamond for his speech, and asked the founder members to be upstanding so that all present could see them, and six of them stood up to loud applause. Next Mr. Reynolds requested that Past Presidents should stand up, and 20 did so. It was indeed a remarkable evening full of memories, old friendships and renewed associations. Mr. Reynolds said that it was most gratifying to welcome such a large gathering to celebrate the Jubilee, and added that 1905 had been quite a year, for the Scottish Eastern and Western Juniors were also celebrating their Jubilee this year. He was glad to have the President of the Institution, Mr. W. K. Tate, with them and also Dr. W. T. K. Braunholtz (Secretary) and Mr. A. G. Higgins (Assistant Secretary).

MR. S. C. CRATHORN, Senior Vice-President, proposing the toast of the Institution, congratulated Mr. Tate on the progress of his Presidency and expressed the wish that the forthcoming Institution meeting at Portsmouth would prove successful and memorable.

MR. TATE responded, and he stressed the need for maintaining their professional integrity. Like commercial enterprises the gas industry and the Institution went through various crises. They had no doubts that all difficulties could and would be overcome, and relied on support from associations such as the Midland Juniors. The Institution would serve the area boards to the best of its ability. The Midland Junior Gas Association had a fine record and maintained, as it should, close links with the Midland Section. He extended greetings from the Council.

MR. J. A. W. STRETTON, Junior Vice-President, proposing the toast of the Past Presidents, spoke of the years of diligent service put into the industry by them, before being elected to high office.

COLONEL F. J. BYWATER, C.B.E., M.C., the Founder President, replied. He recalled that he was Assistant Engineer at Saltley when the Association was formed, and his superiors rather disliked the idea of having 'chatty juniors.' Coloney Bywater paid glowing tribute to the Technical Press of 50 years ago. Without its encouragement and support they could not have gone far. In particular he spoke of the 'GAS JOURNAL' and the late Walter King, father of the present Managing Director, Mr. Clifford King. Colonel Bywater spoke of Walter King as a truly great man.

Gas engineers were inclined to be 'too lopsided,' and he urged them to take up other interests in their spare time, over and above their athletic pursuits. He hoped that they would take his advice and profit by his mistake, for he felt that he could have done a better job had he had a broader outlook on life generally. Colonel Bywater concluded by outlining what he thought the future of the industry would be and how he would like it and its personnel to develop.

MR. J. A. TOMES, Immediate Past President, proposed the toast of the ladies and guests. He welcomed Mr. A. Allen, Chairman of the Midland Section, the Presidents and Secretaries of six Junior Associations, and representatives of firms associated with the gas industry.

Mr. L. G. Townsend, Chairman of the British Junior Gas Association Joint Council, replied.

N.I.F.E.S. First Year of Service

Dr. W. A. Macfarlane, General Manager of the National Industrial Fuel Efficiency Service, in a lecture to the Institute of Petroleum at Llandarcy, and to the Institute of Fuel at Cardiff, said the organization was incorporated as a non-profit making company on December 2, 1953. Its Directors are appointed by the British Productivity Council. Its income comes from the three nationalised fuel industries, the National Coal Board, the Gas Council, and the British Electricity Authority, who jointly have agreed to provide an income of up to £450,000 per annum for the first five years. The Gas Council and the British Electricity Authority both nominated a Director. The National Coal Board decided not to avail itself of such an opportunity, so that the policies of N.I.F.E.S. might be clearly seen to be uninfluenced by the views of the National Coal Board, the principal contributor. The other members of the Board are prominent industrialists and there is no doubt that their decisions are based on their judgment of how service can best be provided to industry and by no other consideration.

N.I.F.E.S. has just completed its first financial year, and it is just over a year since Dr. Macfarlane started to work for it. It has spent a good deal of time in developing collaboration with the fuel distributors who provide a technical service to their customers, and has worked out arrangements which should be of considerable assistance to consumers, and avoid any danger of overlapping of scarce technical manpower. In the first instance, it leaves advice on the combustion of coal and oil to those distributors who possess a force of technical men recognized as competent. If at any time a second opinion is needed, N.I.F.E.S. is prepared to go in and help. If the consumer calls for its services direct, to the exclusion of the distributor, it is obliged to render them.

Next, it is concerned to collaborate with the consultants who are active in fuel utilization. The view has been expressed in a general kind of way that the growth of N.I.F.E.S. must conflict with the business of the consultant. This he did not believe. In the first place N.I.F.E.S. is not generally concerned with taking its advice to the industrial consumer into the phase where the consultant is primarily concerned; that is to say, it does not regard it as its business to translate its recommendations into detailed drawings, nor to supervise the erection of new plant. This country has not yet reached, and will not reach for many years to come, a state where there are too many technical men chasing too few technical jobs. N.I.F.E.S. detailed survey work proves a considerable assistance to the consultant.

The organization's 'self-help campaign' stems from the realization that it would be quite an impossible matter for N.I.F.E.S. engineers to visit every consumer in the country within any reasonable space of time and, further, that many of the major sources of waste are ones which do not require pointing out by specialists—the lack of insulation of steam pipes, the advantages of thermal insulation of buildings, the desirability of mechanical firing of boilers, and so on. N.I.F.E.S. advertisements try to bring home to the industrial consumer the savings that he can make by going direct to the manufacturer.

When N.I.F.E.S. took over operational responsibility from the Ministry of Fuel and Power's Fuel Efficiency Branch, it inherited an organization of district offices which followed the regular pattern of Ministry regional representation. There were 12 of these regional offices, plus two sub-offices in Scotland and one in Sheffield. It is essential in work like this that there should be local addresses to which industrialists can go for advice. On the other hand 12 area offices with 12 complete administrations would pile up the overheads. The distribution of the existing engineering staff among 12 offices and two sub-offices meant that many of the area teams were too small to be fully effective. Some regrouping took place. The offices in Newcastle and Sheffield were brought under an area engineer in Leeds. Both the Reading office and the Bristol office were kept open, but were brought under a single administration, and the same holds for the offices in Tunbridge Wells and London.

The other offices in Wales and in Scotland, in Manchester, in Birmingham, and in Cambridge, where, although the degree of industrialization is small, distances are so large, were left unchanged. This is not necessarily a permanent arrangement and indeed later new offices may be opened in other towns, but for the time being this appears to be the most economical compromise and one whose effectiveness is being proved as the staff is increasing.

Dr. Macfarlane went on to enlarge on the brochure 'N.I.F.E.S. Four-way Service' which was issued within three months of the start of operations. He said he thought the most important development in the last few years in fuel efficiency was the idea of equipping vehicles with all the instruments required to measure the utilization of heat and power throughout a works. This chasing of each errant B.Th.U. has paid dividends. Not only has it revealed sources of waste that were quite unexpected, but it has furnished a sound basis on which the reorganization or extension of works could proceed. It has indeed a bonus of increased production, almost as often as its ordinary dividend of improved fuel efficiency. Sometimes to stretch the matter a little further, it has made a new capital issue unnecessary as a result of saving in steam in the works, and increased productivity has become possible without the extension of boiler plant that was first thought essential. The only criticism levelled is that it has sometimes been used like a steam hammer to crack a nut.

Engineers were asked to simplify and improve the presentation of their reports. There has been a good deal of speculation as a result about how much the managing director wants to read.

A further development since the brochure 'Four-way Service' was issued is the conclusion of regular service agreements with consumers. This reflects the fact that there is no guarantee that once a fuel-using plant has been set right it will stay right. Generally, continuing effort is needed to maintain a standard of efficiency. So the idea emerged of repeated visits throughout the year to assist with one or other aspect of the plant and maintain the whole at a high standard of efficiency. This idea has caught on not only among industrialists but also with local authorities. Indeed to local authorities who must inevitably have a large number of boiler-plants scattered through their area from the town hall in the centre to the public baths, the library and the schools in the suburbs, the idea is commended as a solution to their problem of engineering control.

There are big problems ahead and ther are many aspects of fuel efficiency that N.I.F.E.S. has hardly begun to tackle. One of the most important is the training of boiler operatives, because so much fuel can be wasted when the ill-trained man or the man with no training at all is set to fire boilers.

It is estimated that there are 75,000 boiler operatives employed in industrial boiler plants in this country. It is therefore clear that if a higher standard of training is to become general in a measurable number of years as it must do, that the number of entrants each year for the Boiler Operators' Certificate must be increased a further tenfold. The National Coal Board, in conjunction with the College of Fuel Technology, has developed correspondence courses which the man can study in his own time and in his own home. The courses are coupled with practical demonstrations on the man's own boiler plant or a neighbouring one, and at the same time the work that has been covered by correspondence can be reviewed informally. Obviously the advantages here are great; equally obviously, the cost is much higher than the fee for a technical college course. However, this is a development which is obviously promising and which is now being critically examined.

Dr. Macfarlane, in conclusion, said N.I.F.E.S. had made a good start, a quicker one than many anticipated. The two main factors in its favour had been a growing awareness of the problem in industry—the Press which had been generous to them had kept it constantly before the public—and an enormous amount of goodwill from all those who were professionally concerned with fuel utilization.

GAS CONSULTATIVE COUNCILS

Steps in the Right Direction

Projects totalling over £250,000 were reported at a meeting of the Scottish Gas Consultative Council on April 20 to have been approved by the Scottish Gas Board during the first three months of the year. Two of the most significant items, described by the Chairman, Sir Robert Nimmo, as 'steps in the right direction,' were among the smallest on the list.

One was an item of £1,935, to cover mainlaying for 288 houses at Govanhill re-housing scheme, Glasgow. An explanatory note said: This is a change-over from all-electric houses to gas. Councillor S. Leitch, Deputy Chairman of the Council, commented that tenants were beginning to get back to the old idea of the freedom of choice. In this case they expressed a desire to have gas rather than electricity for cooking. The other represented £4,336 for laying mains to supply 278 houses at Kirklandneuk housing scheme in the Renfrew district. The Town Council had decided to make the whole scheme of 574 houses all-electric, but due to the representations of the District Manager this decision has been rescinded and it has been decided to make 278 of the houses gas/electric. Sir Robert Nimmo expressed appreciation of the District Manager's enterprise and energy.

The divisional and district project figures were: Central Division (Fife group, £57,091; Dundee district, £21,409; Perth group, £2,322), £80,822; Glasgow Division, £65,256; Lanarkshire and South West Division (Paisley district, £24,188; Greenock district, £12,600; Renfrew district, £4,336), £41,124; Northern Division (Aberdeen district, £36,524; Peterhead district, £1,540), £38,064; South-East Division (Hawick district, £16,389; Grangemouth district, £10,260; Peebles district, £2,700), £29,349; Edinburgh Division, £8,248.

Most of the total of the Fife group was taken up with estimated expenditure at Buckhaven and Leven of £45,000 in connection with the linkage main to Kennoway and Anstruther. Mains are to be provided for the supply of gas to Anstruther, where the works will be closed on completion of the mains. The Fife list also showed that the final cost of the 1 mill. cu.ft. Tully plant in the Kirkcaldy district was now estimated at £73,000.

Retort repairs costing £20,259 accounted for most of the expenditure in the Dundee district list. The work to be undertaken includes dismantling and rebuilding retorts, renewing producers, and dismantling and re-erecting existing top iron-work, etc. Reconstruction at two gasworks, Provan and Tradeston, was mentioned in the Glasgow Division list. There was an item for £7,000 for repairs to C.V.R. benches at Provan. Under the proposed scheme of reconstruction, it was explained, the benches were scheduled to go down for complete reconstruction in 1957. Owing to the recent re-orientation of carbonizing plant at Glasgow, however, the reconstruction of the existing retort house at Provan was meantime held in abeyance. It was proposed to cold patch and point the fireclay retorts and carry out the necessary repairs to top and bottom iron work in order to maintain the benches in reasonably good carbonizing condition. The work at Tradeston included the demolition of redundant plant (£8,100) and alteration to booster connection—increase in diameter of mains on both inlet and outlet sides of the booster (£14,000).

A total of £24,188 was being spent on repairs in the Paisley district. The existing retort house conveyor, it was stated, was in a dilapidated and dangerous condition and replacement would cost £8,000. The installation of two 4 mill. cu.ft. per day Rootes type exhausters and one 6 mill. cu.ft. per day electrostatic detarrer would total £13,188. Repairs to the exhauster meter and compressor house would cost £3,000.

The Greenock district was to install a new Rootes type exhauster with a capacity of 6 mill. cu.ft. per day at a cost of £5,100; breeze burning automatic stokers at a cost of £9,500 (£6,000 already authorized); and overhaul the C.W.G. plant at a cost of £4,000.

The main at Aberdeen was in connection with the new gasholder at Tullos. The estimated final cost of the installation, it was stated, was £301,000, of which £266,214 had already been authorized, necessitating an additional authorization of £34,786.

Reference to recent discussions on gassing accidents was made by Sir Robert Nimmo. 'Over the whole country,' he said, 'there has been an unfortunate increase in the number of gassing incidents and the Gas Council and gas boards are concerned. We have not had an extraordinary increase in Scotland, but it is alarming to hear of these incidents.'

The Scottish Gas Board, Sir Robert added, had agreed to remit to its representative the points raised in connection with accidents arising from gas poisoning for submission to the committee set up by the Gas Council.

Councillor S. Leitch reported that a new safety device, invented by a Glasgow man, had been demonstrated to the Glasgow District Controller. After the demonstration the inventor, who agreed that his apparatus had been thoroughly tested, was satisfied that his invention was not complete and that a valve was not sufficiently positive to make it completely dependable. 'In addition,' Councillor Leitch remarked, 'it would be costly to produce, but that was not the reason why the committee did not proceed with it.'

Sir Robert Nimmo informed the members that experiments were now taking place at Grangemouth into the Rochdale process. In reply to a question about the discarded operations at Cousland in connection with the search for natural gas, he said that the matter was now in the hands of the Gas Council and no further information had been received by the Scottish Gas Board. Sir Robert also reported that a special sub-committee had recommended that certain members of district committees, whose attendance at meetings had not been good, should not be invited to serve again.

Lowestoft Gasworks Scheme Dropped

When the Eastern Gas Consultative Council met at the Connaught Rooms, London, on May 16, the Chairman, LIEUT.-COL. R. I. MUSSON, extended a warm welcome to Mr. E. J. C. Dixon, an Assistant Secretary of the Ministry of Fuel and Power, whose presence, he said, indicated the interest which the Ministry took in the Council's work.

MR. C. H. FREWER, Deputy Chairman, presenting the report of the Norwich Divisional Committee, of which he is Chairman, said the Eastern Gas Board had decided not to proceed with the projected works at Lowestoft but to consider instead the erection of a new works at Norwich. The first intimation the Divisional Committee had had of the altered plans was by way of a report in the local Press on the proceedings of the local Planning Committee. He felt that the Committee should be kept informed of major projects of that kind, and on behalf of the Committee he had protested. The Board had since explained why it was not always possible to keep the Committee informed in the early stages of such proposals.

Mr. Frewer added that he had received a visit from a resident in the Thorpe district of Norwich who stated that he had been asked to represent a committee of residents in the vicinity of the proposed new works. The proposal, it appeared, had aroused a lot of criticism, but in view of an impending public enquiry a list of questions to which the protest committee required answers from the Gas Board had been sent on to the Board without comment.

The hope was expressed that the Board would soon make known what it proposed to do with the Lowestoft site. It would be helpful to the local authority to have some indication as to whether the whole of the site would be retained, or whether it would be prepared to dispose of part of it, which might with advantage be used by light industry.

Another item from Lowestoft was that the Board had realized the need to develop the gas showroom site but had been held up by restrictions on building and development. It now proposed to consider seriously the development of the site and plans were being prepared.

Allowances on Old Cookers

The question of allowances on old cookers came up again, and it was reported that the Board had adhered to

its decision not to make any allowances. The Cambridge Divisional Committee reported that one of its members was in the electrical trade, in which it was common practice for him to make a nominal allowance on an old electric cooker to enable a new sale to be made. He had even made allowances on old gas cookers, which he had sent immediately to the scrap yard. His customers appreciated a nominal allowance and in any case were glad to get their old cookers off their hands.

The Council shared the Committee's view that allowances would promote sales, so much so that the cost of the allowances would be offset by increased sales. A need for uniform policy was emphasized by the fact that representations had come from consumers near the North Thames area boundary, whose friends just over the border enjoyed the advantage of a small allowance.

The Chairman, answering questions, said that despite the Board's decision, sales of cookers, water heaters, wash boilers and washing machines per 1,000 domestic consumers were higher in the Eastern area than anywhere else, and for gas and coke space heaters the area came second. Taking all four groups together, Eastern came out on top.

Coal prices and other circumstances render the cost of making gas heavier in the Eastern area than elsewhere, and the Consultative Council has urged the Board to consider the possibility of importing gas from cheaper production areas. The latest communication from the Board stated that it could not move at a greater rate than that resulting from acting in concert with the other area boards. The Board's duty was to maintain, and continue to maintain, a supply of gas, and development in Cambridge had been held up for three or four years to see whether arrangements could be made to import gas from the Avenue coke plant situated on the coalfields near Chesterfield. 'You will be aware', the Board's letter continued, 'that the Board does not enter into large capital commitments lightly, or without very serious consideration, and when the Chairman discussed with the Council the Board's capital development programme, the importation of coke oven gas was fully explained and the reasons given as to why we could not at that stage proceed.'

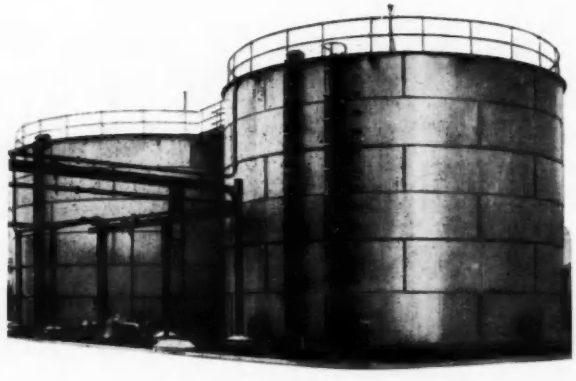
The CHAIRMAN commented that the transfer of gas from one area to another—in other words the possibility of a national grid—was largely a matter for the Gas Council.

Coke Shortages

Coke delivery delays, causing inconvenience to many consumers, particularly those who had small storage space, were reported by the Cambridge Divisional Committee. It was understood that the delays had been caused by transport difficulties and illness, but the Committee asked for more adequate arrangements for the future. Alderman F. Doggett, Chairman of the Cambridge Committee, said although they had been promised adequate supplies, the coke was simply not available, due partly to bad weather and to the increased use of coke for water gas manufacture.

A letter from the Board stated that the delays would have been longer if last summer the Board had not arranged to import into the area 40,000 tons of coke in order to be in a position at the start of the winter to have sufficient stocks to meet demand. All concerned were alive to the need to overcome the difficulties inherent in a peak demand. Plans were well forward for next winter to import 70,000 tons of coke, and the Board was doing everything possible to increase transport and loading facilities. It was also exploring the possibility of establishing storage grounds at strategic points in the area from which distributors—*i.e.*, coal and coke merchants, could take deliveries during peak periods. One difficulty was the insufficient storage capacity of a number of consumers. If the Council could obtain the co-operation of those consumers who had ample storage space to stock their winter needs well in advance it would enable the Board to meet the needs of the smaller consumers at a steady rate of delivery and would have the effect of flattening out the peak. The Board was also experimenting with supplying coke in 28 lb. paper bags in showrooms and oil shops, and if it found this facility met the temporary needs of certain consumers it would extend it, by suitable arrangement, to other retailers.

Answering a complaint about the shortage of shillings at Braintree and



Photograph by courtesy of the North Thames Gas Board

Riveted Steel Tanks at Bromley-by-Bow Gasworks

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Chelmsford, the Board wrote that it was assured that the silver collected from meters was made up in £5 bags and banked without discrimination as to whether they contained all shillings, sixpenses, or other coins. The local banks had stated that when they cashed cheques for payment of wages they made a point of including shillings so that they got back into circulation. There was also a local arrangement among banks to ensure that distribution of silver to banks and Post Offices requiring it was dealt with locally; at no time had they had an excessive stock of silver locked away.

The CHAIRMAN drew attention to the fact that the Deputy Master and Comptroller of the Mint, in the annual report of the Mint for 1953, had referred to the 'intractable problem of providing shillings at the times and places needed,' and had said that 'the number of shilling fuel meters is increasing at the rate of about 400,000 per annum, and in 1953 up to 170 mill. coins may have been immobilized in these at peak periods of demand.'

Arising from a report that the local authority at Braintree was providing gas multipoint water heaters in one of its estates, a discussion ensued on the question of purchase tax on such appliances. The Divisional Committee thought the tax was too high and had the effect of making the appliances a luxury, whereas they were a reasonable and necessary piece of equipment.

A resolution that the Consultative Council should make representations that purchase tax on water heaters should be removed was carried with one dissentient—his view being that an appeal that the tax should be 'reduced' rather than 'removed' was more likely to meet with success.

'Guilty Chimneys' on T.V. Demand

The North Western Gas Consultative Council, meeting at Lancaster on April 21, expressed the view that steps ought to be taken to secure the presentation of the Gas Council film 'Guilty Chimneys' on television. Mr. W. O. Copland pointed out that in view of the importance of the film, which was the product of a nationalised industry, it might be expected the B.B.C. would 'jump at it.'

The Chairman, Alderman C. E. P. Stott, was not so sure. He feared the B.B.C. might take the view that the film was advertising the gas industry.

Members asked for information about the progress being made with the Rochdale process of gas production. If the trial period at Partington had been completed, it would be instructive to learn what developments might be expected. The Chairman said he would ask for a report. In all new processes teething troubles had to be overcome before a proper balance was achieved. As the process had been operating 12 months, perhaps the point had been reached when such information would be obtainable. Apprehensions about future coke supplies were expressed and it was decided to ask the North Western Gas Board for assurances that householders using coke as the basic fuel would have priority over 'spasmodic or promiscuous purchasers,' in matters of quantity and quality, even in times of deficiency.

Mr. S. V. May said apparently coke was being exported yet it was the main fuel for the smokeless zones.

A letter from Padiham Urban District Council was presented to the Consultative Council. It said: 'The Urban District Councils Association have unsuccessfully tried to obtain the permission of the Ministry of Housing and Local Government for local authorities to be able to pay the reasonable expenses of representatives appointed by them in attending the very occasional meetings convened by Gas Consultative Councils or the Gas Board.

'In view of this, my Council will not be prepared to appoint representatives to attend meetings convened by your Gas Consultative Council, on the grounds that if it is right that Urban District Councils should attend such meetings convened by the Gas Board (a responsible public authority), it must be right for the Council to pay the expenses of appointed delegates. Authority to do this has been denied and therefore, rather than incur unauthorized expenditure, my Council have made the above decision until a solution to this difficulty has been found.'

A letter was received from the Lake District Hotels and Caterers' Association, complaining of the high price of gas in their district.

Replying to representations which had been made for uniform tariffs in the North West, Mr. C. E. P. Stott, Chairman, said it was impossible to standardize. In South Lancashire, Manchester, and Liverpool, at least six different tariffs operated.

In the less thickly populated districts, where there were only small units for gas production, it was more costly to produce. It was doubtful if, in some of those outlying areas, gas was sold at a profit.

No action was taken.

New Gas Tariffs for West Midlands

Owing to increased costs of production higher charges for gas in the West Midlands area are imminent. The Gas Consultative Council has approved new tariffs and also sanctioned a recommendation that further coal charges on a higher basis shall be incorporated. The increases will not be made before June 30. The proposed revision of gas tariffs will produce additional revenue of £1,600,000 in a full year towards extra costs amounting to £2,500,000 leaving £900,000 to be absorbed by way of internal economies.

Effect in Large Towns

Under the proposed tariffs as reported in the 'JOURNAL' of May 18, most of the larger towns', including Birmingham and Wolverhampton, consumers will pay 1½d. more for the first 45 therms per quarter and 1½d. more for the excess. For Stoke-on-Trent, Newcastle-under-Lyme, Kidsgrove and Congleton, the increase will be 1½d. for the first 45 therms and 1½d. for the excess. The maximum price is increased by 1½d. to 2s. per therm and covers 19 small towns and districts. Minor adjustments are made in the district tariffs, with the consequence that the increased prices payable in Coventry, Walsall, Dudley, Stone, Shrewsbury, Bewdley, Leek, Cannock, Nuneaton, Rugeley and Stratford-on-Avon will be less than elsewhere. In Bromsgrove, Cheadle, Lichfield, Tamworth and Uttoxeter prices will be unchanged for the first 45 therms and lower for the balance. No date has yet been fixed for the introduction of the new tariffs, but it will not be earlier than June 30. This is because further, and possibly substantial, increases in the cost of coal are expected in the near future, and the proposed tariffs will need to be further increased to cover these costs.

Taking the last two tariff revisions together, the Board's costs have increased since 1952 by over £4,200,000, of which £2,400,000 has been or is to be raised through the tariffs.

Gas sales increased by 7.2% in the year just ended and industrial consumption was up by 11.1%. Many undertakings had all-time output records. Coke is in great demand now that the contribution it can make to the clean air campaign is more widely known. The continued confidence in gas and its products, says the Gas Board, makes it all the more regrettable that tariffs have had to be increased. Nevertheless, some satisfaction may be found in the fact that prices have been held for two years despite constantly increasing costs, and that the amounts passed on to consumers are well below the additional costs to be met by the Board.

Raising £800,000 More

In a report prepared for the Consultative Council, it was stated the present tariffs were introduced with effect from meter readings on or next following June 30, 1953. Compared with the earlier tariffs, the current tariffs were designed to produce additional income of £800,000 in a full year as a contribution towards increased costs amounting to £1,725,000. For its part, the Board undertook at that time to do its best to meet the balance of £925,000. This large balance has, in fact, been covered by higher operational efficiencies and administrative economies,

aided by increased sales of gas and appliances. In September, 1954, the Board informed the Council that further additional burdens (then estimated to cost £1,330,000) had arisen up to that date. It was then clear that tariffs would ultimately have to be raised to meet these further burdens, but the Board decided to hold gas prices at current levels until at least April 1, 1955. This decision meant that last year consumers' gas bills were in the aggregate £1 mill. less than they would have been if tariffs had been immediately increased to cover additional costs.

Comprehensive budgets have recently been prepared which have enabled the Board to assess the additional costs which have been incurred during the two years since tariffs were last reviewed, and to determine the minimum amounts by which tariffs must be increased so that financial self-sufficiency may be maintained as prescribed by the Gas Act, 1948. The additional costs amount to no less than £2,496,512, the principal items being increases in the delivered costs of coal (£1,073,166), wages and salaries awards (£947,500) and increased capital charges (£904,846), as reduced by additional income from coke amounting to £623,000.

It is emphasized that these additional burdens, which arise from causes outside the control of the Board, represent all the known extra costs since tariffs were last revised in June, 1953, to date, but the bill for over £2 mill. which confronts the Board takes no account of further increases in the pit-head prices of coal, which are believed to be imminent. As it is impossible to predict the effect any such increases would have on the Board's revenues, they have been ignored in the present tariff proposals. The Board has decided that, of the additional costs of £2,496,512, the minimum amount that can be passed on to gas consumers through the tariffs is £1,600,000 in a full year, leaving a balance of £900,000 to be borne internally. These economies need to be considered in conjunction with the many other savings effected since vesting date and it must be recognized that the theoretical limit at which the Board can absorb additional costs is rapidly being approached.

The Gas Consultative Council at its meeting in Birmingham on May 16, approved of the proposals and also sanctioned the incorporation of the further higher coal prices believed to be imminent.

A resolution was passed deploring the effect on the price of gas of the continued rise in coal prices and the imminence of further increases—though it was recognized that the miners must be well paid—and the Council also registered a strong protest and an intense feeling of frustration at the inevitable necessity of having to approve the continued raising of gas tariffs in spite of the considerable economies effected by the Board.

Another resolution which was passed recorded the strongest protest against the withdrawal of North Staffordshire coal from the Stoke-on-Trent undertaking and the substitution of Yorkshire coal at an enhanced cost to the Board.

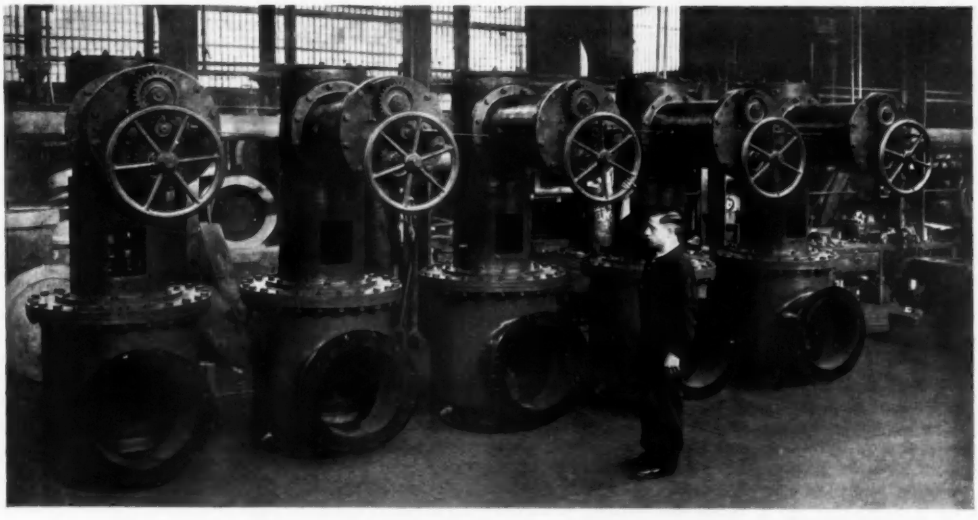
Mr. G. le B. Diamond (Chairman of the Board) said the Coal Board was importing Yorkshire coal into Stoke and exporting good gas making coal from Stoke to other parts of the country.

'Coal Quality Has Dropped'

'Not only are you paying five times more for your coal than you did in 1914—the quality has deteriorated 'to a considerable extent,' Mr. D. S. Dickson, Manager of the Fife group of the Scottish Gas Board, told members of Kirkcaldy Rotary Club on May 5.

The price of coal delivered at Kirkcaldy Station in 1914 was 15s. 6d. per ton, he said. After the first world war it had risen to 22s. 4d., and in 1939 consumers were paying 31s. 10d. per ton. When the mines were nationalised, the cost was 55s. 7d., and Mr. Dickson said that last years' figure was around 75s. per ton—exclusive of haulage charges.

He agreed that coal had been too cheap in the past, and this had led to waste of one of the country's most valuable assets. But he could not agree that recent price increases were justified. Britain's gas industry used 25 mill. tons of coal annually and industry had found 4,000 different uses for the gas produced.



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VALVES FOR HOT GAS WITH ROTATING DISCS

London and Southern Section Spring Meeting

Sir Harold Smith at Annual Luncheon

Mr. Eric O. Rose, Engineer, Tottenham Division, Eastern Gas Board, delivered his Chairman's Address at the spring meeting of the London and Southern Section of the Institution of Gas Engineers at the Connaught Rooms, London, on May 17. At the meeting, the Management Committee's nomination of the following officers for the ensuing year were confirmed: *Chairman*, Mr. J. M. Webber, *Senior Vice-Chairman*, Mr. G. Dougill, *Junior Vice-Chairman*, Mr. C. Stott, *Secretary*, Mr. A. F. Grant, *Auditors*, Mr. H. A. Probin and Mr. C. J. Sawbridge. Mr. Rose's address will be published in a future issue of the 'GAS JOURNAL.'

Proposing a vote of thanks to Mr. Rose for his address, MR. W. K. TATE, President of the Institution of Gas Engineers, congratulated him on the manner in which he had brought to their attention so many things about which they could usefully think. Mr. Rose and he had at least three things in common—they were both civil engineers, officers of gas boards, and very much aware of the need for supporting discussions at the meetings of the sections, in order to get some idea of the activities of their colleagues.

The Chairman had covered a wide field. Mr. Tate said he would particularly draw their attention to the importance of what Mr. Rose had said about the importance of setting down the aims and objectives of a project. He almost saw in that some of the teaching of the old masters of engineers. They had always insisted that their pupils should keep notebooks of their day-to-day work—not only so they could see how things were going, but also so that they might set their minds in order, to deal with coming responsibilities.

Mr. Tate said he thought that of all Mr. Rose's references to engineering matters, the one that struck him most was about the necessity of planning their works for the maximum utilization of labour. He thought they had too often, in the past, tried to attain fancy outline rather than looking at it another way and planning the maximum economy in manpower and efficiency. The trained mind, too, was very evident in the question of producing good coke out of coal.

On nationalisation, Mr. Tate said he could not follow Mr. Rose on his reflection that they were arbiters of their own fate when it came to administration. But it had done one thing. It had made engineering more of a relexation for them and that might be no bad thing. Relaxation was pleasure and one's approach towards pleasure was sometimes more productive.

The Luncheon

At the annual luncheon preceding the meeting, SIR HAROLD SMITH, Chairman of the Gas Council, proposed the toast of the London and Southern Section. Had it been a toast to the Southern Association of Gas Engineers and Managers, he said, he would not hesitate, but that, alas, was rather a long time ago, and they had in fact succeeded to the old Association. He would say they were quite worthy successors.

They were living in new times. In their old Association they used to meet together as individual engineers and managers and it was their only chance of learning what was going on in other parts of the area. They used to discuss the prices of coke and the prices of tar and ten thousand other things which today were dealt with by their area boards. They might discuss them, said Sir Harold amid laughter, but he doubted very much whether there was much they could do about them. At the same time it made sure that any advice they had would be gratefully received.

But, continued Sir Harold, as he saw the position today they had become very largely a technical organization and he understood that in future, as new members joined, one of the qualifications would be that they must be members or associate members of the Institution. In addition, he believed, there were a very large number of men who were principally engaged on the sales side of the industry among their membership. Sir Harold said he thought the real reason was that they could all see that they had reached a turning point in the industry and they wanted technicians and engineers of the very highest qualifications to deal with problems that they were going to meet.

A Challenge

Sir Harold went on to say that he thought they were all getting quite bored with talking about the shortage in the qualities of gas coal that they wanted and the price they had to pay for it, but they all knew that these factors had been a challenge to them. They had not just sat down and wrung their hands in despair. In fact they were doing quite a lot about it. They had speeded up their research into complete gasification and they were making gas from oil. In the South Eastern area, as a result of work that was initiated by the South Metropolitan Company, the Segas plant was now developed and making gas from heavy oil residues. In the West Midlands area the Onia-Gegi process was operating and plants to those two designs were being erected up and down the country. At the moment they appeared to be rather limited in capacity. They were conducting research into plants which they believed would have very much larger capacity.

In the South Eastern area they had just made arrangements with the Esso Petroleum Co., Ltd., for rigging expansion plant which it was hoped would gasify any feedstock which the oil company might have available.

After mentioning the search for natural gas, Sir Harold said through the facilities offered by Mr. Milne-Watson and his Board, they were considering the importation of liquefied methane. All these things were going to mean they should want a very much higher standard in their technical men in the future and he thought it meant that there was a lot of work for a section of the Institution.

Sir Harold coupled with the toast the name of Mr. Rose, the Chairman, whom, he said, he had known since 1920.

The CHAIRMAN, responding, said although they certainly were not the same as the old Southern Association, they were still going strong. They had a large membership—about 250—and held a meeting every month during the winter. The Section was not entirely technical, it endeavoured to give a fair diet to its members with papers from accountants, salesmen and people of all descriptions. Mr. Rose said he thought they were doing a useful service because they were all very busy and they could not, as engineers, keep abreast of the times unless they got the other people to talk to them from time to time.

The Guests

MR. J. M. WEBBER, proposing the toast of the guests, welcomed Mr. Owen Francis, Mr. E. J. Dixon and Mr. J. S. Smith, all of the Gas Division, Ministry of Fuel and Power. Among others he welcomed were Mr. F. G. Brewer, Secretary of the Gas Council, Mr. W. K. Tate, Dr. W. T. K. Braunholtz, O.B.E., Secretary of the Institution, and Mr. A. G. Higgins, Assistant Secretary; and the Chairman of four area boards: Sir John W. Stephenson, C.B.E. (Eastern), Mr. Michael Milne-Watson (North Thames), Mr. A. R. McBain, C.B., O.B.E. (Southern) and Mr. W. K. Hutchison, C.B.E. (South Eastern). There were also three Deputy Chairmen: Mr. F. M. Birks, C.B.E. (North Thames), Mr. J. H. Dyde (Eastern), and Mr. R. S. Johnson, O.B.E. (South Eastern).

SIR JOHN W. STEPHENSON, C.B.E., responded.

The Bryan Donkin Co., Ltd., is manufacturing Rateau high speed centrifugal gas boosters and exhausters of the latest design. At present it has orders for 24 sets, several of which are installed and in operation. The duties of these machines to date range from 300,000 cu.ft. per hour, at 50 in. W.G. outlet pressure to 1 mill. cu.ft. per hour at 15 lb. per sq. in. outlet pressure, the latter duty being that of a machine on order for the Quebec Hydro Electric Commission of Montreal, Canada.

A Select Conference on heat flow problems, convened by the Institute of Welding, was held at the Selsdon Park Hotel on May 16 and 17 and attended by about 20 investigators drawn from industry, the universities and research associations.

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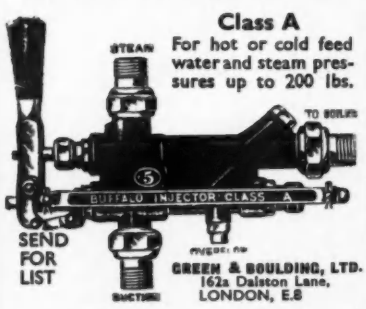

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APPLICATIONS are invited, before June 30, 1955, for the Eighth Arthur Duckham Research Award, being a Fellowship the holder of which will be required, for a period commencing in September, 1955, and not exceeding 12 months in the first instance, to carry out approved investigations into the composition and/or decomposition of coal. The Fellow will be privileged to work in the Central Laboratory of the Dutch State Mines under the direction of Prof. Dr. D. W. van Krevelen (Director of the Laboratory) and will receive an allowance at the rate of £800 per annum, together with necessary travelling expenses. Applicants, who should be between 24 and 30 years of age, should hold an Honours Degree in Chemistry of a British University. Conditions from the Honorary Secretary, Arthur Duckham Memorial Fund Committee, 17, Grosvenor Crescent, London, S.W.1.

19.5.1955.

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

DOWSON & MASON GAS PLANT CO., LTD., Alma Works, Levenshulme, Manchester 19, have vacancies for JUNIOR DRAUGHTSMEN for the design of Industrial Furnaces. The work is interesting and varied in nature. Applicants should have knowledge of this type of work and also served a recognised engineering apprenticeship. Good working conditions, 5 day week. Pension Scheme. Applicants should state age and full details of experience and qualifications.

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RESEARCH STAFF required for intensive research programme on the chemical, biochemical and chemical engineering aspects of industrial waste disposal. Applicants should have a degree or equivalent qualification (such as the A.R.I.C.), and the appointments may carry opportunities for taking higher degrees. A knowledge of statistics would be an advantage for one of the appointments. Salary normally within range £550-£900, but consideration will be given to higher salaries for candidates having special qualifications. Applications, giving date of birth, qualifications and experience, should reach the Registrar, The University, Leeds, 2, not later than June 30, 1955.

(Classified advertisements continued on p. 533

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NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN REPRESENTATIVE: A. Engelhardt, 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Central 2236-7

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. *Telegrams:* Gasking, Fleet, London.

APPOINTMENTS VACANT *(ctd.)*

WEST MIDLANDS GAS BOARD

CIVIL ENGINEERING ASSISTANT

APPLICATIONS are invited for the above position at Board Headquarters, Edgbaston, Birmingham.

The successful candidate will be required to assist in the design and layout of drawings of foundations and structures in reinforced concrete, and also steel frameworks in connection with the installation of new gas plants and other projects. Some practical experience in civil engineering draughtsmanship is essential.

Opportunity will be provided for graduates or holders of the Higher National Certificate to qualify for membership of the Institute of Civil Engineers.

The commencing salary will be not less than £600 per annum.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, within fifteen days of the appearance of this advertisement.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON AND DISTRICT DIVISION
TECHNICAL ASSISTANT—
WOLVERHAMPTON DISTRICT

CANDIDATES should have practical experience of the control and working of continuous vertical retorts and automatic C.W.G. plants.

The salary will be within Grade 6 (£565-£645 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. Stanley Jones, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION
TECHNICAL ASSISTANT TO THE MECHANICAL ENGINEER, FOLESHILL GAS WORKS, COVENTRY

CANDIDATES should have had good practical experience of the installation and maintenance of mechanical plant, preferably on a large Gas works, and hold, as a minimum qualification, Higher National Certificate in Mechanical Engineering.

The salary will be within Grade 9 (£700-£800 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. A. Allen, Divisional General Manager, West Midlands Gas Board, Gas Street, Coventry, to reach him within fifteen days of the appearance of this advertisement.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION
TECHNICAL ASSISTANT,
COVENTRY DISTRICT

APPLICATIONS are invited for the above position at the Foleshill Works, Coventry. Candidates should have had a good general training in all branches of gas manufacture.

The salary will be within Grade 5 (£530-£610 per annum) of the National Salary Scales.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications, stating age and experience, together with the names of two referees, should be addressed to Mr. A. Allen, Divisional General Manager, West Midlands Gas Board, Gas Street, Coventry, to reach him within fifteen days of the appearance of this advertisement.

J. C. INGRAM,
Secretary to the Board.

NORTH EASTERN GAS BOARD

HULL GROUP
BRIDLINGTON DISTRICT
TECHNICAL ASSISTANT

APPLICATIONS are invited for the above position at a salary within Grade A.P.T. 7 (Provincial 'A') (£620-£700 per annum) of the Salary Scales agreed by the National Joint Council for Gas Staffs.

Living accommodation is available at a rental of £26 per annum plus rates.

Applicants should hold the Higher Grade Certificate of the Institution of Gas Engineers (Manufacture), have practical knowledge and experience in the control of Gas Works Plant and be able to carry out all the routine chemical tests; experience of the working of I.V.C. will be an advantage.

The successful applicant will be required to pass a medical examination and to join the Board's Staff Pension Scheme.

Applications giving age, qualifications and experience should be sent to A. L. Higham, Esq., Group General Manager, North Eastern Gas Board, Sculcoates, Hull, to be received by him not later than June 8, 1955.

J. C. GARDNER,
Secretary.

Bridge Street,

SCOTTISH GAS BOARD

DUNDEE GROUP—DUNDEE DISTRICT
TECHNICAL ASSISTANT (CONSTRUCTION)

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT (Construction) with the Dundee Undertaking of the Scottish Gas Board.

Applicants must have experience in the preparation of Specifications, Estimates, Layout of Works Plans for development of Works Plant, Structural Development, and Supervision of Erection of New Plant. They must be University Graduates, or Corporate Members of an Engineering Institution.

The salary applicable to this post will be within Grades A.P.T. 7/8 of the National Salary Scales (£620-£740 per annum) with placing according to experience and qualifications. The post is superannuable, and permanent appointment is dependent on the successful passing of a Medical examination. Applications, stating age, training, experience and qualifications, together with any testimonials, should be lodged with the Undersigned within 14 days of the appearance of this advertisement. W. S. JOHNSTON, B.Sc., M.Inst.Gas E., M.Inst.F., Group Manager.

Scottish Gas Board,
Dundee Group,
Gas Works,
50, East Dock Street,
DUNDEE

SCOTTISH GAS BOARD

DUNDEE GROUP
BRECHIN DISTRICT
WORKS FOREMAN

APPLICATIONS are invited for the position of WORKS FOREMAN.

Applicants should have experience in Gas Works routine and knowledge of Vertical Retort Plant would be an asset.

The commencing Salary will be Intermediate Grade VII (£510-£555).

A house is available under a service occupation agreement at a reasonable rental.

R. L. LAING, M.Inst.G.E.,
District Manager,
Gas Works, Brechin.

EAST MIDLANDS GAS BOARD

NOTTS AND DERBY DIVISION
DISTRICT GASFITTING FOREMAN—BURTON-UPON-TRENT UNDERTAKING

APPLICATIONS are invited for the position of DISTRICT GASFITTING FOREMAN to work in conjunction with the District Representative Scheme.

Applicants must possess a 1st Class Gasfitter's Certificate.

Housing accommodation is available under a Service Occupation Agreement.

The salary payable will be within Grade A.P.T. 4a (£495-£575) according to experience.

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications stating age, experience and present position, together with the names of two referees, should be addressed to the District Manager, East Midlands Gas Board, Wetmoor Road, Burton-upon-Trent, not later than Tuesday, May 31, 1955.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts & Derby Division,
P.O. Box No. 62,
Friar Gate,
DERBY.

EAST MIDLANDS GAS BOARD

NOTTS & DERBY DIVISION
NOTTINGHAM UNDERTAKING
SHIFT SUPERINTENDENT

APPLICATIONS are invited from suitably qualified persons for the above position at the Basford Works of the Nottingham Undertaking.

Candidates should hold the Higher Grade Certificate in Gas Manufacture of the Institution of Gas Engineers or an equivalent technical qualification.

The plant includes Woodall Duckham vertical retorts and Humphreys & Glasgow C.W.G. Plants.

The salary will be within A.P.T. 9 (£700/£800) commencing at a figure commensurate with qualifications and experience.

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications, stating age and giving details of education, qualifications and experience, together with the names of two referees should be addressed to the undersigned not later than Saturday, June 4, 1955.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts & Derby Division,
P.O. Box No. 62,
Friar Gate,
DERBY.

(Classified advertisements continued on page 534)

It hits you . . .

. . . these days that the only way to sell an appliance or an electrostatic detarrer is to take the thing into your client's office. Which has its difficulties, as you may agree. But then you obviously have not seen the sort of 3-D slides produced by **Walter King Photographs,** who are specialists at the game. Why not see for yourself? Call, write, or 'phone them at 11, Bolt Court, Fleet Street, E.C.4. (CENtral 2236)

APPOINTMENTS VACANT (ctd.)

NATIONAL COAL BOARD

EAST MIDLANDS DIVISION
CARBONISATION DEPARTMENT

APPLICATIONS are invited for a SCIENTIST Grade II (£800 x £35—£1,150) in the laboratory of the Avenue Carbonisation and Chemical Plant.

Applicants should possess Hons. B.Sc. or A.R.I.C. or equivalent qualifications, and should have had experience in carbonisation, benzole refining and tar products. Experience in sulphuric acid manufacture will be an advantage.

Applications to the Administrative Officer, P.O. Box 16, Chesterfield, within 14 days of publication.

NORTH WESTERN GAS BOARD

APPLICATIONS are invited for the following pensionable appointments:—

WIRRAL GROUP
DISTRICT SERVICE MANAGER—Hoylake District.

The salary will be within Grades A.P.T. 11/12 (£785-960 per annum).

The person appointed will be responsible for all aspects of consumer service within the district, including the operation of gas installations and maintenance staffs, and the control of showroom and sales staff.

Detailed applications, giving the names of two referees, should reach the General Manager, N.W.G.B. (Wirral Group), Hind Street, Birkenhead, within 14 days.

MANCHESTER GROUP
TECHNICAL ASSISTANTS (PRODUCTION)

The salary will be within Grades A.P.T. 6/8 (£565-£740 per annum), according to experience and qualifications.

Applicants must have had experience in the maintenance, operation and efficient working of all types of carbonising plant.

Detailed applications giving age, qualifications and experience, and the names of two referees, should reach the General Manager, N.W.G.B. (Manchester Group), Town Hall, Manchester, 2, within 14 days.

CENTRAL LANCASHIRE GROUP
SECOND ASSISTANT CHEMIST—Higginshaw Works, Oldham.

The salary will be within Grade A.P.T. 6 (£565-£645 per annum).

The successful applicant will be responsible to the Chief Chemist for conducting all necessary routine chemical tests required for the operation of the Works and also to carry out any special investigations which may be required from time to time.

Applicants should possess suitable technical qualifications, and Gas Works experience, though not essential, will be an advantage.

Detailed applications giving the names and address of two referees, should reach the General Manager, North Western Gas Board, Central Lancashire Group, Gas Offices, Dane Street, Rochdale, within 14 days.

CHIEF SALES ENGINEER. Must be fully qualified with considerable experience of design and construction of large materials handling plants. Age 35-50 years. Applicants who have held good executive positions in a substantial organisation preferred. Salary commensurate with ability and experience. Pension scheme. Accommodation available. Applications to Managing Director, Robert Cort & Son, Ltd., Reading Bridge Ironworks, Reading.

SOUTH EASTERN GAS BOARD

HOME SERVICE ADVISER, THANET GROUP
(Broadstairs, Margate, Ramsgate and Westgate Areas)
Kent County Division

SUCCESSFUL applicant will be required to conduct demonstrations, give lectures and advise consumers in their own homes in the use and care of gas equipment.

Preference will be given to applications from persons who:—

(a) have had not less than 3 years' experience in demonstrating in Gas Industry; and
(b) have undergone training for 2 years at a recognised training college of Domestic Arts: and
(c) hold a diploma in cookery, housewifery and laundry work.

Salary within Grade 6 (Prov. " A ")—£459-£523 p.a.

Applications will be considered from persons who have not the experience indicated in (a) above, but in such circumstances the commencing salary will be within a lower grade than 6.

Applications in writing quoting reference V10/547 and giving full details should reach the undersigned within ten days.

R. J. McCRAE,
Personnel Manager.

Katharine Street,
CROYDON.

WALES GAS BOARD

SWANSEA UNDERTAKING
TECHNICAL ASSISTANT (DISTRIBUTION)

APPLICATIONS are invited from suitably qualified and/or experienced persons for the above mentioned vacancy.

Applicants should be experienced in the preparation of specifications, drawings and estimates for distribution work; experience in the control of labour and in the supervision of work being carried out by Contractors would be an advantage; considerable development is taking place and the work would involve both high and low pressure systems.

Salary will be in accordance with Grade A.P.T. 6 (Provincial A) of the National Salary Scales (£565-£645) commencing at a figure commensurate with qualifications and experience.

The post is superannuable and the successful applicant will be required to pass a medical examination.

A house with garage will be available at a reasonable rental.

Applications, stating age, training, experience and qualifications, accompanied by names of two persons to whom reference can be made, should reach the undersigned not later than Saturday, June 11, 1955.

A. PICKARD, M.Inst.Gas E., M.I.I.A.,
General Manager & Engineer.

Gas Offices,
Oystermouth Road,
SWANSEA, Glam.
May 14, 1955.

EASTERN GAS BOARD

TOTTENHAM DIVISION
MECHANICAL ASSISTANT—SOUTHGATE WORKS

APPLICATIONS are invited for the appointment of MECHANICAL ASSISTANT at Southgate Works. Candidates should be Corporate Members of the Institution of Mechanical Engineers or possess an equivalent qualification.

The successful applicant will be one of the Technical Assistants of the Works Engineer and will be responsible to him for the Mechanical and Constructional Maintenance on the Works and must be capable of organising his work on a planned basis. Electrical experience would be an advantage. He should be experienced in the supervision of Craftsmen.

The successful candidate may be required to pass a medical examination and, unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

The salary for this appointment will be in accordance with Grade A.P.T. 10/11 (Metropolitan) (£790-£940) per annum of the National Salary Scales for Gas Staffs.

Applications stating age, qualifications and experience, should reach the Divisional Personnel Manager, Woodall House, 658, Lordship Lane, Wood Green, N.22, not later than Monday, June 6, 1955.

EASTERN GAS BOARD

(CAMBRIDGE DIVISION)
TECHNICAL ASSISTANTS

APPLICATIONS are invited for vacancies for TECHNICAL ASSISTANTS at the Cambridge and Peterborough Undertakings where there are installations of vertical retorts and carburetted water gas plants.

Candidates should have completed National Service training. The salary will be in accordance with A.P.T. Grade 7, Provincial ' A ' (£620-£700 per annum), the initial placing depending on age and experience.

The successful candidate may be required to pass a medical examination and, unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Eastern Gas Board Staff Pension Scheme within six months from taking up the appointment.

Applications giving full details of training, qualifications and experience together with the names of two referees, should be sent to the General Manager, Eastern Gas Board (Cambridge Division), 52, Sidney Street, Cambridge, by June 10, 1955.

MISCELLANEOUS

FOR Rapid and Permanent Repairs to Conveyor Belting use the " SELVULIZE " Cold Vulcanizing System. Can also be used for Cold Vulcanizing Endless Joints. Inexpensive and easy to use. Write for further details to:—

G. E. SIMM (ENGINEERING), LTD.,
27, Broomgrove Road,
SHEFFIELD, 10. TEL.: 62981.

FOR Pipe Installation or any lifting and pulling work use the TIRFOR Machine. Any height of lift or length of pull. Entirely hand operated. Write for catalogue to:—

TIRFOR, LIMITED,
27, Broomgrove Road,
SHEFFIELD, 10. TEL.: 62981.

PLANT FOR SALE

FOR SALE:—Two Reavell Single Stage Turbo Blowers, size B.431, capacity 20,000 cu.ft. per minute, against a pressure of 30" W.G. Speed 2,920 r.p.m. Require 125 H.P. to drive. Excellent condition.

Three Howden Induced Draught Fans for waste heat gas, capacity 21,000 cu. ft. per minute, 15" W.G. at 1,440 r.p.m. Runner 46½" dia. Require 100 H.P. to drive. Weight approx. 3½ tons each. Excellent condition.

Large stocks of NEW and RECONDITIONED VALVES for steam, water, oil, etc., up to 24" bore. List on application.

G. E. SIMM (MACHINERY), LTD., 27, BROOMGROVE ROAD, SHEFFIELD, 10. Tel.: 64436.

CONNELL OF COATBRIDGE

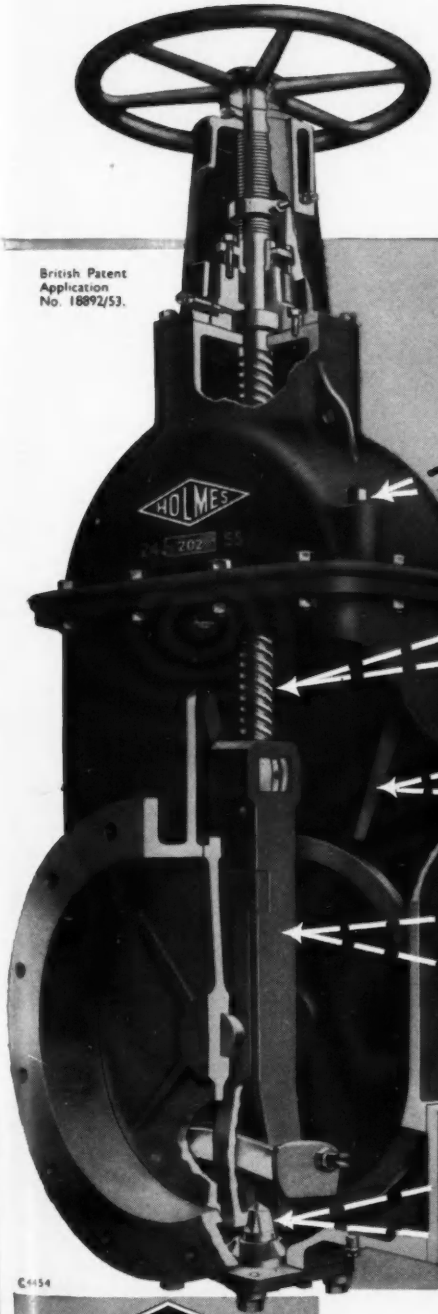
ECONOMIC
Hudson Patent Economic Boiler 18′ long × 8′ 6″ dia. with two side banks of tubes each 24′ long × 4′ 8″ dia. Working pressure 150 lbs. per sq. inch. Evaporation 14,000 lbs. per hour, with automatic stokers.
Paxman, horizontal, economic multitubular Boiler 14′ long × 8′ 7″ dia. × 160 lbs. working pressure. Evaporation approx. 7,990 lbs. per hour from feed at 212°F.

LANCASHIRE
One—24′ long × 9′ dia. × 190 lbs. working pressure. Hand fired.
One—21′ long × 7′ 6″ dia. × 100 lbs. working pressure. Hand fired.

VERTICAL
Blake vertical multitubular, coal fired, 17′ 6″ high × 7′ dia. × 160 lbs. working pressure. Evaporation approx. 3,000 lbs. per hour.
Cochrane No. 10 vertical multitubular, coal fired, 12′ 3″ high × 5′ 6″ dia. × 100 lbs. working pressure. Evaporation approx. 1,620 lbs. per hour.
Vertical Coal Fired, cross tube, 12′ × 6′ × 100 lbs. working pressure.
Vertical Coal Fired, cross tube, 8′ 6″ × 4′ × 100 lbs. working pressure.
Vertical Coal Fired, cross tube, 8′ 5″ × 4′ 6″ × 120 lbs. working pressure.
Vertical Coal Fired, cross tube, thimble tube, 8′ 3′ 9″ × 80 lbs. working pressure.
Vertical Coal Fired, cross tube, 7′ 6″ × 4′ × 10 lbs. working pressure.
Cochrane, Vertical, coal or gas fired, hot water Boiler, 6′ × 3′.
Scottish Agents for Riley Boilers and pressure Vessels.
Full particulars from:

JAMES N. CONNELL, LIMITED.
COATBRIDGE,
SCOTLAND.
Telephone: COATBRIDGE 1121 (5 lines).

*THE RE-DESIGNED Western DOUBLE-FACED valve



British Patent Application No. 18892/53.

VENT PLUGS are provided for use when proof of complete isolation is demanded by safety requirements.

STAINLESS STEEL SPINDLE with improved indicator and gland assembly.

DISC GUIDES machined to perfect the parallel slide action of the valve.

NEW DESIGN of disc assembly incorporating disc levers loaded by cam-tensioned spring of stainless steel, easily accessible through inspection cover with the valve in the closed position.

FULL WAY features retained with improved adjustable wedge arrangement.

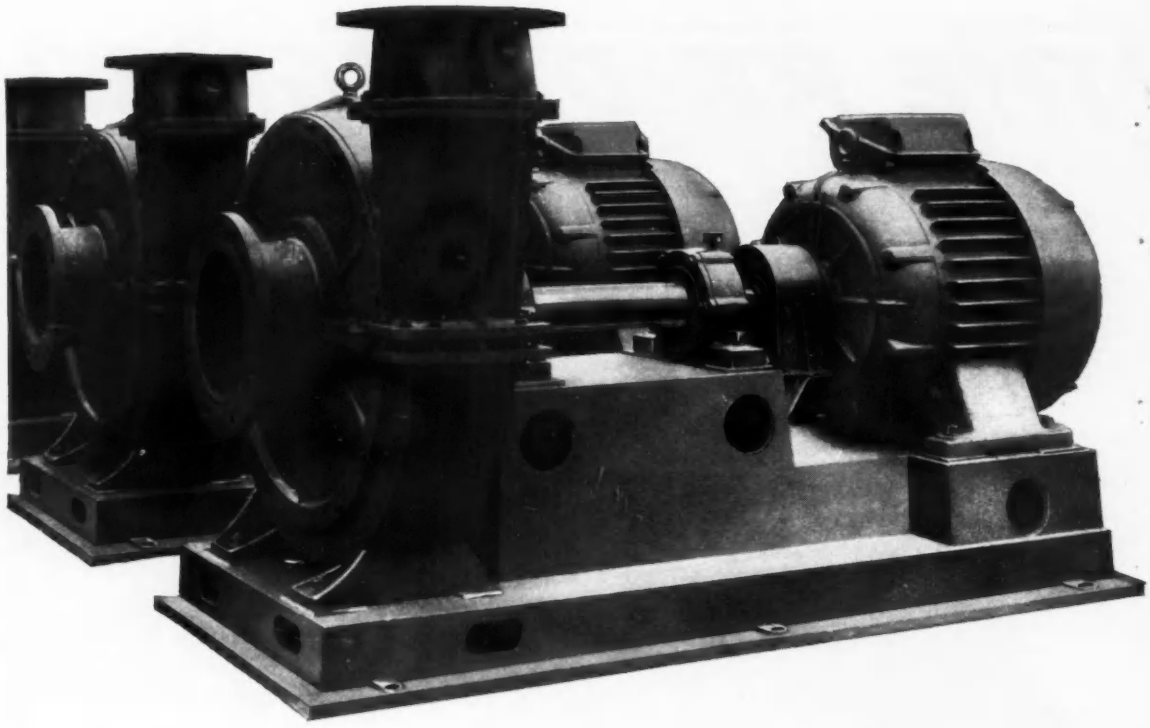
C4454

Please write for Publication No. 52/5

FOUNDED 1850 HOLMES HUDDERSFIELD

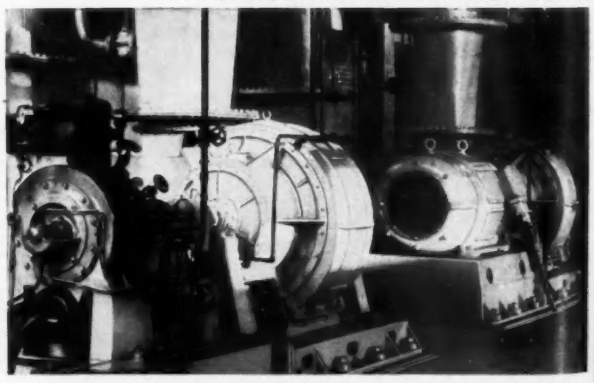
W. C. HOLMES & CO. LTD.

HUDDERSFIELD · LONDON · BIRMINGHAM



Gas Boosters?

Photo by courtesy of the S. E. Gas Board and Humphreys & Glasgow Ltd.



EXAMPLES of gas boosting fans with cast iron casings are illustrated here. They represent the results of special attention to the design and development of robust, trouble-free boosters over the years. This experience provides fans for handling volumes of 5,000 to 1½ million cubic feet of gas per hour at pressures up to several pounds per square inch.
When the time comes you'll find there's no easier way to solve your air or gas moving problem than to put it to Keith Blackman.

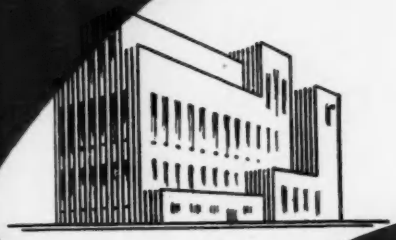
contact **Keith Blackman Ltd**

MILL MEAD ROAD · LONDON · N17 · TOTtenham 45[illegible]2

T.A. 225/6[illegible]

Registered as a Newspaper. Printed by STRAKER BROTHERS LTD., E.C.2 for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4., Wednesday, May 25, 1955

Two sides to the question . .



CONTINUOUS

OR INTERMITTENT

. . one answer WEST'S

GLOVER-WEST CONTINUOUS VERTICAL RETORTS

C·O·L INTERMITTENT VERTICAL CHAMBERS

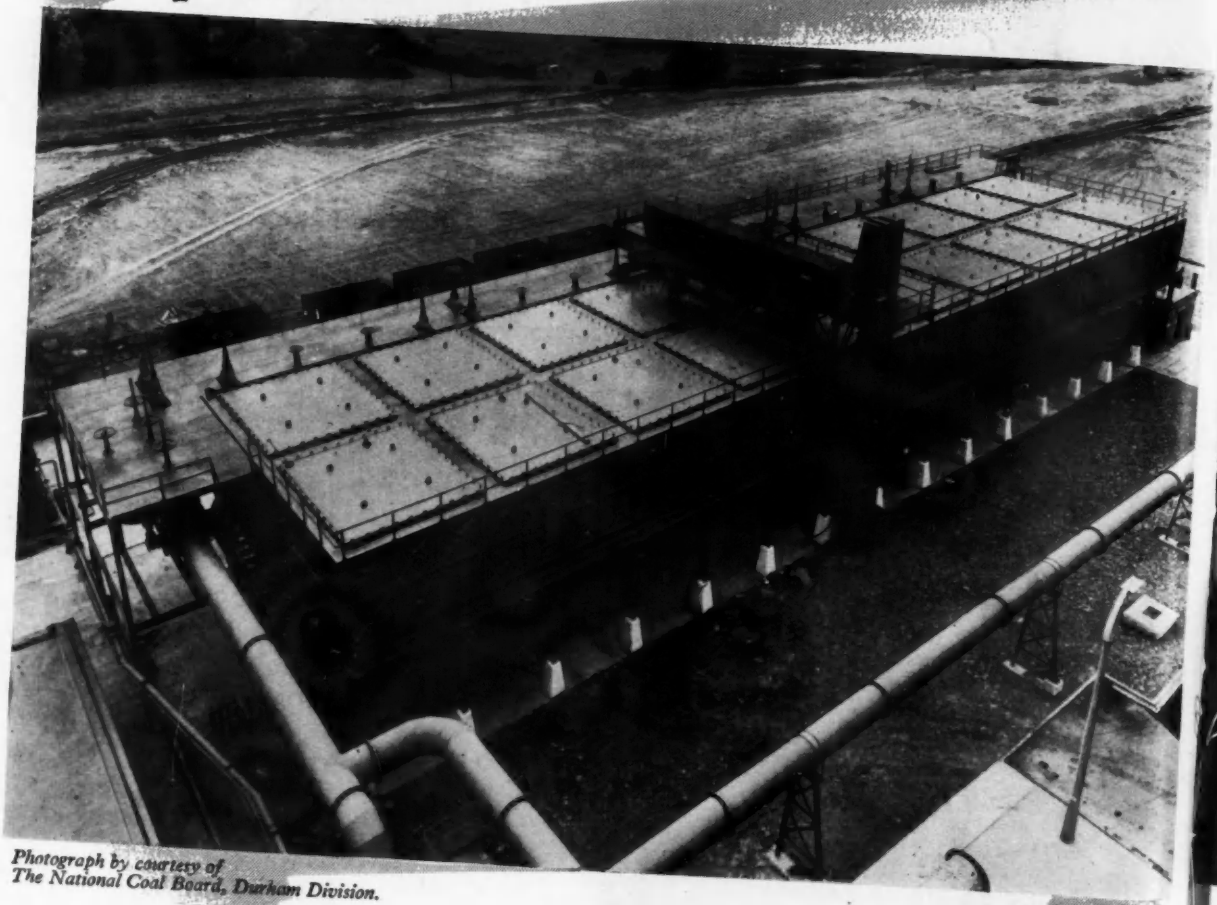
WEST'S GAS IMPROVEMENT COMPANY LIMITED

Albion Ironworks, Miles Platting, Manchester 10. Telephone: COLlyhurst 2961

London: Columbia House, Aldwych, W.C.2. C.O.L. Division: Chandos House, Buckingham Gate, S.W.1.

GC

7 MILLION CUBIC FEET PER DAY



Photograph by courtesy of The National Coal Board, Durham Division.

Cast Iron Gas Purifiers

These Purifiers, recently completed for the new Fishburn Coking Plant of the National Coal Board, are another example of a completed Purifier installation by Newton Chambers. May we assist you with your Purification problems?

NEWTON CHAMBERS

& CO. LTD., THORNCLIFFE, Nr. SHEFFIELD